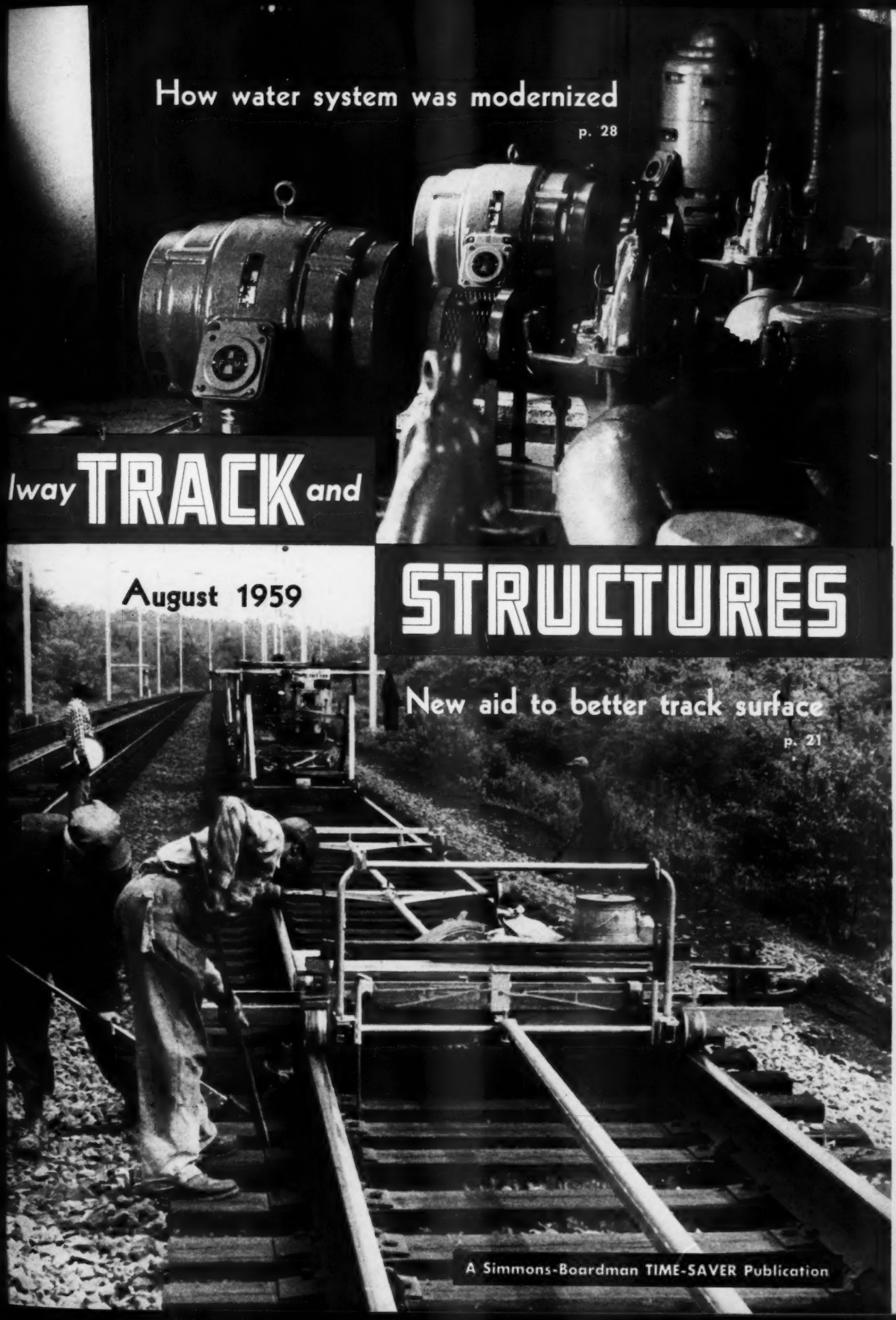


How water system was modernized

p. 28

Railway TRACK and STRUCTURES

August 1959

New aid to better track surface

p. 21

A Simmons-Boardman TIME-SAVER Publication

Four-span railroad bridge over Dallas-Fort Worth Turnpike...

Great Southwest R R saved $10,000 by choosing bridge girders of prestressed concrete

The twelve pretensioned, prestressed concrete bridge girders over the Dallas-Fort Worth Turnpike are the longest of this type ever used on a U.S. railroad. Great Southwest achieved low cost and ease of erection, got the bridge up fast across the busy turnpike. The twelve 67-foot beams and twelve 46-foot beams were all placed in two daylight working days without interrupting traffic!

The cost of all girders in place was only $26,370. Part of the savings came from the inherent economy of prestressed concrete construction. Even greater savings were possible because engineers modified highway girder forms on hand for railroad loading, saved the cost of special forms.

Great Southwest is one more modern railroad turning to concrete for construction economy, durability and more efficient operation.

Design by: Powell and Powell, Consulting Engineers, Dallas, Texas.
Owners: Great Southwest Railroad, Inc., Dallas, Texas

PORTLAND CEMENT ASSOCIATION

A national organization to improve and extend the uses of concrete

Bethlehem triples capacity for heat-treating rails

Growing demand from cost-conscious railroads can now be met promptly

A major expansion of facilities for heat-treating rails has just been completed at our Steelton, Pa., plant. And there's a good reason why: railroads have been reporting 2 to 4 times longer life with heat-treated rails. Now, with our capacity tripled, we can speed up deliveries.

Cost-conscious railroads are finding that heat-treated rails are wearing several times longer on curves where operating conditions are severe. A Bethlehem man will gladly work with you in arranging a test installation. He will also be glad to show you facts and figures on actual installations which we think will interest you.

Right now is a good time to let our nearest sales office give you full details.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

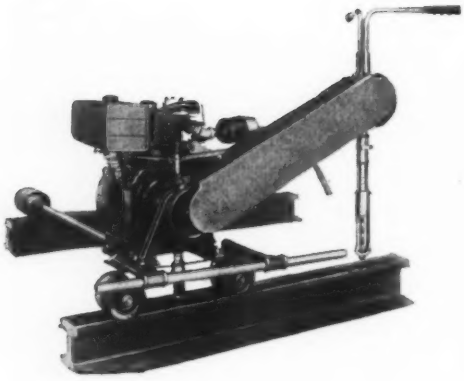
Export Distributor: Bethlehem Steel Export Corporation

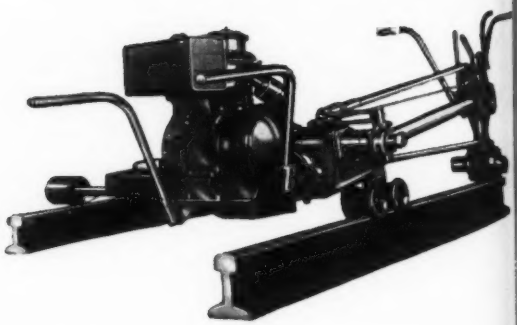
BETHLEHEM STEEL

BETHLEHEM STEEL

Published monthly by Simmons-Boardman Publishing Corporation, 10 West 23rd St., Bayonne, N. J., with editorial and executive offices at 79 West Monroe Street, Chicago 3, Illinois; 30 Church Street, New York 7, New York. Subscription prices: to railroad employees only in the United States and Possessions, and Canada, one year $2.00. Re-entry of second class privileges authorized at Newark, N. J., with additional second class privileges, Bristol, Conn. Volume 55, No. 8.

FOR MORE THAN A QUARTER CENTURY THESE TWO HAVE PRODUCED





Light — Fast
Ample Power —
well adapted
for selective
drilling.

RACO PRODUCTS
ENGINEERED FOR LONG LIFE

In over 25 years

Two Models
Parts Interchangeable
Micro Cut-Out Accuracy
Power to break a bolt
Reasonably Light
Ample Speed

RAILROAD ACCESSORIES CORPORATION
MAIN OFFICE: 405 LEXINGTON AVENUE, NEW YORK 17, N.Y.
Factories: Albany, N. Y. • Woodside, N. Y.

Railway TRACK and STRUCTURES

AUGUST

1959 • Vol. 55, No. 8

EXECUTIVE OFFICES
30 Church Street, New York 7, N. Y.
ROBERT G. LEWIS Publisher
EDITORIAL OFFICES
79 W. Monroe St., Chicago 3, Ill.
MERWIN H. DICK Editor
R. E. DOVE Associate Editor
EARL W. HODGKINS, JR. Associate Editor
LILLIAN L. WATERS Editorial Assistant

•

Published monthly by Simmons-Boardman Publishing Corporation. James G. Lyne, Chairman of the Board, Arthur J. McGinnis, President and Treasurer, Duane C. Salisbury, Executive Vice-President, Harry H. Melville, John R. Thompson, John S. Vreeland, Robert G. Lewis, M. H. Dick, Walter R. Browder, Joseph W. Kizzia, Michael J. Figa, Jr., George W. Hutchings, R. C. Van Ness, Vice-Presidents, George Dusenbury, Vice-President and Editorial and Promotion Director.

•

BRANCH OFFICES: 1081 National Press Bldg., Washington 4, D.C.; 1501 Euclid Ave., Cleveland 13; 244 California St., San Francisco 11; 1336 Wilshire Blvd., Los Angeles 17; 3908 Lemmon Ave., Dallas 19, Tex.; Jericho Manor, Jenkintown, Pa.; Suite 203, Carlton House, Pittsburgh 19, Pa.; 22 Eighth St., N.E., Atlanta 9, Ga.

FOREIGN REPRESENTATIVES: Sibley-Field Publishing Co., Ltd., 8/9 Clerkenwell Green, London E.C. 1, England, Georg J. Linder, continental European representative, (16) Frankfurt am Main, Wittlesbacher Allee 60, West Germany.

•

Subscription price to railroad employees only in the U.S., U.S. possessions and Canada, $2.00 one year, $3 two years, payable in advance postage free. All other countries, $8 one year, $16 two years. Single copies 75¢.

Address all subscriptions and correspondence concerning them to: Subscription Department, Railway Track and Structures, Emmett Street, Bristol, Conn. Changes of address should reach us three weeks in advance of the next issue date. Send old address with the new, enclosing, if possible, your address label. The Post Office will not forward copies unless you provide extra postage. Duplicate copies cannot be sent.

POSTMASTER—SEND FORM 3579 TO EMMETT STREET, BRISTOL, CONN.

•

Member, Audit Bureau of Circulations (ABC). Indexed by Engineering Index, Inc.

New aid to better track surface 21
"Midget" wire device detects imperfections in track surface, is designed for use in spotting track or for working behind raising operations.

Treats waste with dissolved air 24
Effluent from terminals on the Union Pacific is treated by a technique called "pressurized dissolved air flotation."

Wheels for trackwork grinding 26
Abrasive engineer discusses types of abrasives and wheels, tells how to match wheels to the job and gives tips on operation.

Modernizing old water system 28
Tells how the Soo Line brought up to date a 70-year-old installation consisting of a deep well with air lift and steam-driven pumps.

Prefab locker-tool room unit 30
The Jersey Central is using a new type of section house. It's a trailer-type unit that's towed to the site and the wheels removed.

How adapter cuts relay costs 37
Special shims enable new rail with narrower base than existing rail to be laid on old tie plates, with savings in material and labor costs.

Grade changes complicate liner-plate job 39
Problem encountered by Burlington when lining a failed masonry arch was solved by using washers of varying thickness in liner-plate joints.

Departments

Manufacturers' helps 7
News about people 10
Biographical briefs 10
Opinion 12
News notes 19
News briefs in pictures 40
Products 42
What's the answer? 46
Association news 59
Supply trade news 60

◀ Don't miss . . .

Modern machines and new ideas have combined to help New Haven cut its rail-laying force one-third. Machines include self-propelled spike pullers, cribber-adzer, spike setter, two rail-anchor applicators.

. . . in the September issue

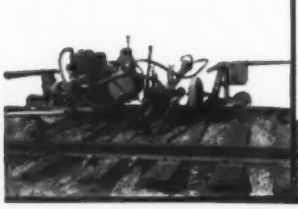
FAIRMONT

The tie handler that does 3 jobs for triple savings

Simple as 1, 2, 3—*one* W90 Tie Handler, operated by *two* men, does these *three* jobs: It removes ties rapidly where track is raised or jacked because one man can manipulate the machine and boom while the other man handles the tie tongs. It quickly inserts new ties under raised track, or where old tie bed is scarified, with the second man using the cable attaching bracket to guide new ties into position. And when ties are in ditches or any place too far from the tracks for easy handling, this machine quickly skids the ties onto the shoulder, thus eliminating another time-consuming job, reducing over-all costs.

An important feature of this compact Fairmont W90 Tie Handler is the hydraulic power that is mechanically multiplied to give smooth, steady pull with accurate control of the ties plus greater safety. What's more the low center of gravity provides better stability . . . ample power assures efficient operation . . . and self-propulsion saves time. Two men can remove the machine from the tracks in a matter of minutes. And because the W90 is built to Fairmont's high standards, long life with minimum service is assured. You are invited to write today for details of the many advantages you enjoy with the triple-duty Fairmont W90 Tie Handler.

W68 SERIES A HYDRAULIC TIE REMOVER removes 60 ties per hour. Ruggedly built. Requires only two-man operation.



W86 SERIES B HYDRAULIC RAIL LIFTER makes the job of removing or inserting tie plates a quick and easy one.

W87 SERIES B TIE BED SCARIFIER digs a new tie bed in less than a minute. Self-propelled, hydraulic operation, one-man control.

W84 SERIES B HYDRAULIC SPIKE PULLER is primarily for use in tie gangs. Will pull from either rail without changeover.

50
LEADER
FOR HALF A CENTURY

"More ties are removed with Fairmont equipment than by all other mechanical means."

Fairmont
RAILWAY MOTORS, INCORPORATED
FAIRMONT, MINNESOTA

Helps from Manufacturers

The following compilation of literature—including pamphlets and data sheets—is offered free to railroad men by manufacturers to the railroad industry. To receive the desired information, write direct to the manufacturer.

CRANE-EXCAVATOR. A new 12-page, 2-color bulletin is available which describes and illustrates the Bantam Model C-350 crawler-mounted crane-excavator. The standard and optional features of the machine are described in Bulletin C-350. These include the heavy-duty turntable design, drum shaft and swing assembly, three types of boom hoists and multiple-speed transmission. Model C-350 is pictured in various types of applications. Also included are the front-end attachments that are available for use with the machines. (Write: *Schield Bantam Company, Dept. RTS, Waverly, Iowa)*

MONOTUBE PILES. Monotube fluted-steel foundation piles are described and illustrated in a 24-page catalog now available. Designated Catalog 91, it includes test-driving data, technical information and photographs of typical installations. Specifications are also given as well as excerpts from recently-enacted building codes applicable to Monotube piles. (Write: *The Union Metal Manufacturing Company, Dept. RTS, Canton 5, Ohio)*

EARTHMOVING EQUIPMENT. Five standards for measuring big tractor value are described in a new 8-page, 2-color booklet entitled "Five Yardsticks." The booklet, Form 33341, lists performance, dependability, matched equipment, serviceability and dealer organization as the five standards as applied to tractors in the D8-D9 class. Illustrations show the machines in various types of applications. (Write: *Caterpillar Tractor Company, Dept. RTS, Peoria, Ill.)*

WIRE ROPE. A bulletin is available which gives suggestions for curbing the losses due to fatigue of wire rope. Designated Red-Strand Service Bulletin 105, it has four pages and explains the importance of the proportion between the diameter of wire rope and the diameter of the sheaves and drums on which it runs. Also included in the bulletin is a table which shows the relative bending life of all major wire rope constructions. Suggestions are given concerning reverse bends and fatigue damage caused by end attachments. (Write: *Leschen Wire Rope Division, H. K. Porter Company, Inc., Advertising Department, Dept. RTS, 2727 Hamilton Ave., St. Louis 12, Mo.)*

LIGHTING. The advantages of using Wide-Lite lighting units with color-corrected mercury vapor lamps are given in a folder now available. Various models are described and illustrated in the folder, including outdoor area lights, Vapor-Tite floodlights, indoor luminaries, protective lights, Hi-Bay luminaries and high-output lights. Different applications of the units are shown and briefly explained. The outstanding features of the line are listed. The folder also includes typical candlepower distribution curves for several models. (Write: *Wide-Lite Corporation, Dept. RTS, P.O. Box 191, Houston 1, Tex.)*

TRENCH DRILL. A 6-page bulletin is available which describes and illustrates a new line of trench drills. Bulletin TD-159 gives the operating specifications and dimensions of the three models included in the line. Recommended uses are also given. The various types of augers and heads available for use with the drills are shown and briefly described. Pictures show how the new trench drills are used to drill horizontal holes beneath railroads and highways without disrupting traffic. (Write: *The Salem Tool Company, Dept. RTS, Salem, Ohio)*

GAS MANIFOLDS. The complete line of Airco manifolds for industrial gases is described and illustrated in a revised catalog now available. The 24-page revised edition gives general background material on the advantages of manifolding and includes specific information on capacities, dimensions and arrangements. Current data are given on the standard manifolds that are used for gaseous oxygen, argon, nitrogen, helium, acetylene, hydrogen and propane. (Write: *Air Reduction Sales Company, Division of Air Reduction Company, Inc., Dept. RTS, 150 East 42nd St., New York 17, N.Y.)*

↑ EXHIBIT HEADQUARTERS – CHICAGO COLISEUM

It's Coming in September... are you?

CONRAD HILTON HOTEL
CHICAGO

Under one roof—a gigantic display of the latest machines, devices and materials offered to help reduce railroad maintenance costs. Come and see how much these products have been improved in efficiency, quality, and durability since the last exhibit in 1956. You'll find a bonanza of cost-saving ideas. Plan now to attend the conventions—allow plenty of time to inspect the displays at the Coliseum.

for Information write:

Association of Track and Structure Suppliers

LEWIS THOMAS, Director of Exhibits
59 E. Van Buren Street, Chicago 5, Ill. • Harrison 7-7143

← **CONVENTION HEADQUARTERS**

"Life of rail on high side of curve has been extended up to 300%."
"Outside rail on curves, formerly changed every two years, now transposed only when low rails become corrugated and flattened."
"Less gauging due to rail wear, saving labor and ties."
"Canting of rail on curves has been reduced."
"Significant reduction of wear on switch points, frogs, and special trackwork."
"Without track lubrication, leading wheels of diesels required turning for flange wear at 20,000 miles."
"250% increase in wheel life."
"Lowest maintenance cost."
"Best control of grease flow."

Talk about big savings with Racor Lubricators!

These are typical results obtained by using Racor® rail lubricators. For savings like this on your road consult your Brake Shoe representative.

AMERICAN **Brake Shoe** COMPANY

RAILROAD PRODUCTS DIVISION
530 FIFTH AVENUE • NEW YORK 36, N. Y.

Racor units lubricate up to 360° included angle of curve within ten miles of track. Additional capacity is obtained in multiple installations. Models available for both jointed and welded rail.

A-2983

NEWS ABOUT PEOPLE

BALTIMORE & OHIO—J. E. Graham, senior engineer at Cincinnati, Ohio, has been promoted to regional engineer there, succeeding **James P. Ray,** whose retirement was announced in the May issue.

CANADIAN NATIONAL—F. L. Peckover has been appointed soils engineer with headquarters at Montreal, Que. **W. H. Miller,** bridge and building master, Toronto (Ont.) Terminals, has retired after 44 years of service.

CHESAPEAKE & OHIO—Robert E. Cross, assistant division engineer, Grand Rapids, Mich., has been promoted to division engineer there, succeeding **James L. Alvord,** who has been promoted to senior staff engineer at Cleveland, Ohio. In this position Mr. Alvord is responsible for engineering staff services to operating department officers. He assumes management development and personnel functions within the operating department previously assigned to **John E. McLeod,** staff assistant to vice-president-operations, who retired June 1. **Prentice L. Graves,** assistant to chief engineer, retired recently after 30 years of service.

ELGIN, JOLIET & EASTERN—Gordon W. Martyn, senior designer at Joliet, Ill., has been promoted to office engineer there, succeeding **John M. Hopkins** who has been advanced to engineer of design at Joliet. Mr. Hopkins succeeds **Thomas V. Pyle,** whose death was announced in the July issue.

FRISCO—L. A. Thomas, roadmaster at Fort Scott, Kan., has been promoted to trainmaster-roadmaster at Springfield, Mo.

D. L. Walker, general foreman bridges and buildings and water service at Fort Smith, Ark., has been transferred to Springfield, Mo., succeeding **G. C. Payne** who has in turn been transferred to Tulsa, Okla. Mr. Payne succeeds **Virgil L. Leak** who has retired after more than 50 years of service.

In addition, the following assistant general foremen bridges and buildings and water service have been promoted to general foremen bridges and buildings and water service at the locations shown: **A. H. Bunch** at Fort Smith, Ark., and **J. A. Latimer** at Fort Worth, Tex.

GAINSVILLE MIDLAND—T. B. Hutcheson, chief engineer of the Seaboard, has been appointed chief engineer of the Gainsville Midland, with headquarters at Richmond, Va. This is the result of the recent acquisition of this road by the Seaboard.

INDIANA HARBOR BELT-CHICAGO RIVER & INDIANA—The following changes have occurred recently at Gibson, Ind.: **Paul L. Carter,** assistant engineer, to office engineer; **Frederick B. Lenz,** draftsman, to assistant engineer, and **Louis J. Dulla,** draftsman, to methods engineer.

LEHIGH & HUDSON RIVER—Gordon L. Ellms, assistant engineer maintenance of way at Warwick, N. Y., has been promoted to engineer maintenance of way there, succeeding **I. D. Talmadge** who has retired.

MAINE CENTRAL—Roscoe F. Woodrow, assistant supervisor bridges and buildings at Portland, Me., retired recently after 47 years of service.

NEW YORK CENTRAL—R. L. Teeter, assistant division engineer at Toledo, Ohio, has been promoted to division engineer at Cleveland, Ohio, succeeding **R. W. Orr** who has been promoted to assistant district engineer there. Mr. Orr succeeds **A. Matthews, Jr.,** transferred.

John Stang, division engineer at St. Thomas, Ont., has been transferred to Chicago. **Bryan J. Murphy,** assistant division engineer at Columbus, Ohio, has been transferred to Cleveland, succeeding **William W. Kerr,** who in turn has been transferred to Columbus.

Lyle Bristow, staff engineer at New York, has been promoted to resident engineer at Indianapolis, Ind., in charge of construction of a new yard there. **Theodore E. Church,** assistant engineer at Cleveland has been promoted to clearance engineer there. **C. L. Nolan,** assistant division engineer at Chicago, has retired after 46 years of service.

NORFOLK & WESTERN—Benton E. Crumpler, assistant to chief engineer at Roanoke, Va., has been promoted to assistant chief engineer there, succeeding **W. L. Young** who has been promoted to chief engineer, also at Roanoke. Mr. Young succeeds **Arthur B. Stone** who retired July 1 after 54 years of service.

NORTH WESTERN—W. H. Huffman, assistant chief engineer, has been appointed assistant chief engineer-construction. **M. S. Reid,** engineer maintenance, has been appointed assistant chief engineer-maintenance. The title of **J. A. Barnes,** assistant to engineer maintenance, has been changed to assistant to assistant chief engineer-maintenance. All have headquarters at Chicago.

Raymond Stotka, assistant roadmaster at St. Paul, Minn., has been appointed acting roadmaster at Eau Claire, Wis., succeeding **C. E. Miller** who is away due to illness.

PENNSYLVANIA—The following changes have occurred recently: **L. W. Green,** regional engineer at Philadelphia, to resident engineer at Washington, D. C.; **D. E. Pergrin,** regional engineer at Indianapolis, Ind., transferred to Philadelphia; **J. T. Evans,** assistant regional engineer at New York, to regional engineer at Indianapolis; **J. J. Baffa,** district engineer at Baltimore, Md., to assistant regional engineer at New York; **W. B. Knight,** district engineer at Harrington, Del., transferred to Baltimore; **William Glavin,** assistant district engineer at Altoona, Pa., to district engineer at Harrington; **D. R. Wolfe,** supervisor of track at Lancaster, Pa., to assistant district engineer at Altoona; **G. E. Hartsoe,** supervisor track at Wilmington, Del., to supervisor methods and cost control at Philadelphia; **J. K. Hite,** supervisor track at Blairsville, Pa., transferred to Lancaster; **L. P. Bonfardin,** supervisor track at Columbia, Pa., transferred to Blairsville; **G. R. Gaspard,** supervisor track at Alliance, Ohio, transferred to Columbia; **J. C. Hunsberger** to supervisor track at Alliance; **C. H. Davis,** supervisor track at Northumberland, Pa., transferred to Wilmington; **R. A. Kendall,** supervisor track at Pocomoke, Md., transferred to Northumberland; **W. G. Lehn** to supervisor track at Pocomoke.

D. S. Frazer, Jr., to assistant supervisor track at Freedom, Pa.; **W. A. Strohschein** to assistant supervisor track at Trenton, N. J.; **R. D. Wallace** to assistant supervisor track at New York; **W. R. McGranahan** to assistant supervisor track at Aspinwall, Pa.

PITTSBURGH & LAKE ERIE—Robert A. Dubs, instrumentman at Pittsburgh, Pa., has been promoted to engineering assistant there, succeeding **Andrew D. Grueser, Jr.,** who has been promoted to assistant supervisor, also at Pittsburgh. **William C. Hetrick,** arc welder at Pittsburgh, has been promoted to welding supervisor there.

ROCK ISLAND—C. J. Overholser, who has been on leave of absence since February 16, returned to his position as general roadmaster at El Reno, Okla., on July 12. **J. C. McConnell,** acting general roadmaster at El Reno, has returned to his former position as roadmaster at Iowa City, Iowa. **C. S. Grimm,** roadmaster at Iowa City, has returned to his former position as roadmaster at Eldon, Iowa. **T. J. Burian,** acting roadmaster at Eldon, has been appointed assistant roadmaster with the recently activated surfacing gang.

Obituary

R. A. Gravelle, engineer maintenance of way of the Grand Trunk Western at Detroit, Mich., died in Providence Hospital, Detroit, on June 20 at the age of 62.

Biographical Briefs

Rupert J. Tingley, 33, who was recently promoted to assistant engineer of track of the Canadian National at Montreal, Que. (*RT&S*, May, p. 10), was born at Petitcodiac, N. B., and graduated from the University of New Brunswick in 1950. Mr. Tingley entered the service of the Canadian National in that year and served as an instrumentman and assistant engineer at Moncton, N. B., New Glasgow, N. S., Montreal and London, Ont. In 1957 he was advanced to division engineer at Edmundston, N. B., the position he held at the time of his recent promotion.

(More on page 55)

now it's easier to Destroy Weeds...

with ready-to-use, easy-to-apply

EFFECTIVE...ECONOMICAL

UREABOR®

WEED and GRASS KILLER

Here's your thriftier, easier way to stop weeds! Look in that hand and you'll see enough UREABOR to kill vegetation in a 12 sq. ft. area! Consider the convenience and economy this can mean to you. Consider, too, that a UREABOR "kill" remains effective for a season or longer. And UREABOR has important safety features; it is *nonflammable, nonpoisonous* when used as directed, and *does not corrode* ferrous metals. Protect your timber structures, yards and buildings from fire-hazardous weeds by applying UREABOR weed killer now... it's easier to apply!

Nothing to mix... no water to haul

One easy application—dry—may keep ground weed-free for a season or longer!

This special spreader for UREABOR makes application fast and easy...

The PCB Spreader applies UREABOR to best advantage, at prescribed low rates. It holds enough UREABOR to treat up to 2500 sq. ft. without refilling—weighs a mere 6 lbs.

Write today for complete information!

AGRICULTURAL SALES DEPARTMENT

United States Borax & Chemical Corporation

PACIFIC COAST BORAX COMPANY DIVISION

630 SHATTO PLACE, LOS ANGELES 5, CALIFORNIA

Techniques at derailments

In spite of all the efforts made to avoid them, derailments and wrecks continue to occur. In fact, judging by comments made by track men around the country one would be inclined to conclude that they are taking place with unusual frequency, although there are no summary figures available to confirm this deduction.

In any event accidents to trains continue to be a source of considerable expense. Even though this expense apparently can't be eliminated, new ways are continually being found to reduce the cost of making repairs to the property and of speeding up the restoration of traffic.

Where the trouble occurs on multiple-track lines several railroads are reducing the cost of repairs by the simple expedient of eliminating overtime work after one track has been restored.

The "hook" continues, of course, to be indispensable as a means of handling derailed equipment. One road is reportedly converting its wrecking cranes into even more effective units by redesigning the trucks and propelling mechanisms to the end that the machines can be moved over the line at freight-train speeds.

To back up the conventional wrecking crane the railroads are using a wide assortment of mobile equipment, some units of which are frequently moved over the highways on special trailers.

Still another innovation is the use by at least one railroad of prefabricated track panels to speed up the reconstruction of tracks at derailments.

The point is that the work involved in clearing wrecks, like any other operation, is susceptible to new ideas for reducing the cost and cutting down the time required to do a job.

The central issue in labor negotiations today

The railroads on the one hand and the railroad brotherhoods on the other are now preparing for a showdown over wages, working rules and other issues. Both the operating and non-operating groups, including the Brotherhood of Maintenance of Way Employees, are involved.

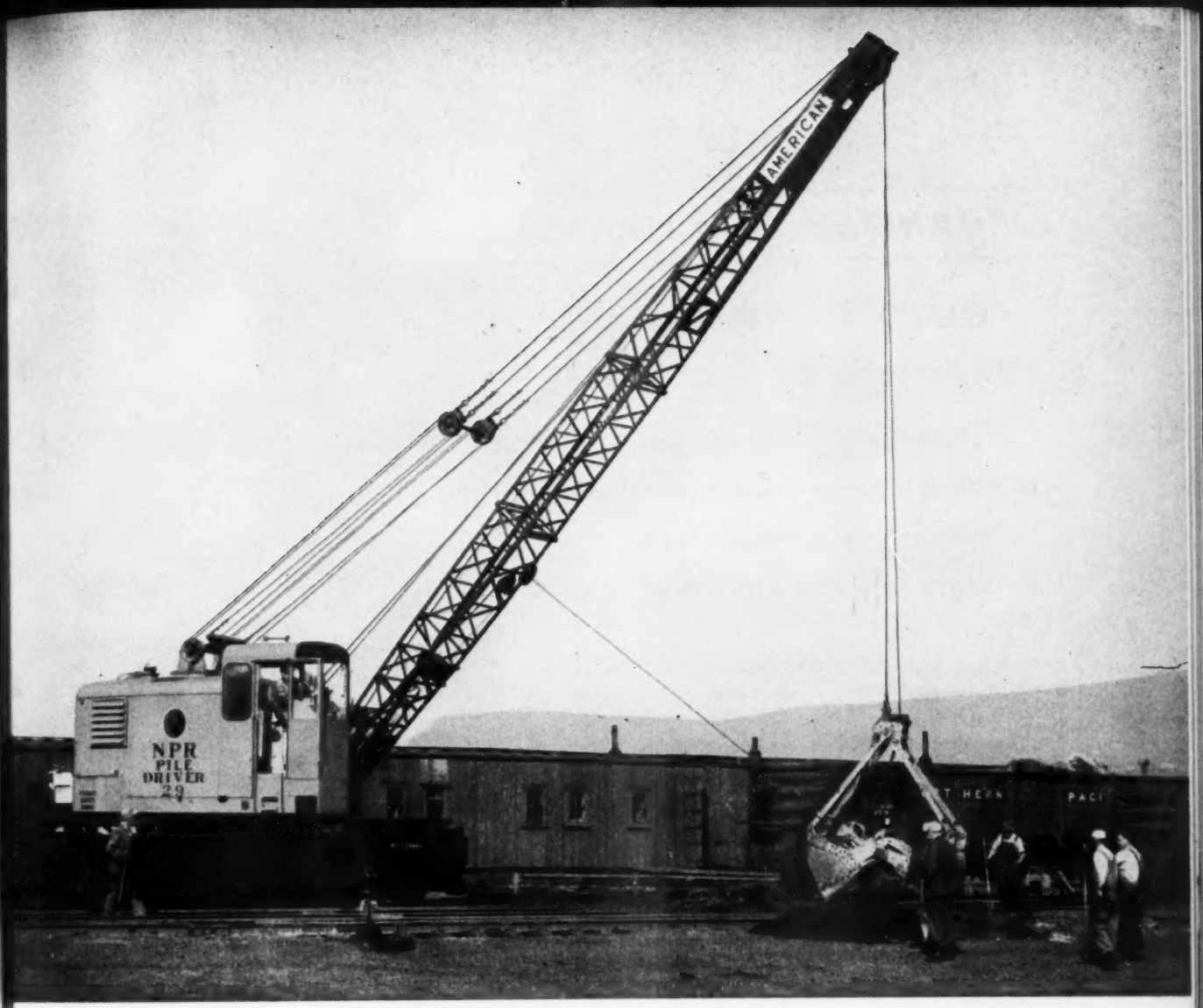
The battle is almost certain to be bitter and protracted, perhaps more so than for many years. This conclusion appears warranted in view of what seems to be a growing conviction, not only on the railroads but throughout industry generally, that some sort of line must be established and held against the demands of the labor unions. The alternative, many authorities are convinced, could be serious trouble for individual industries and perhaps for the entire economy.

Looking back over the past decade it is easy to see how the present situation came to pass. It started with the successive rounds of wage increases that were generated during the post-war boom. At first industry, including the railroads, tried to counteract these higher costs by increases in prices or rates. When it became apparent that this practice could be carried only so far before it resulted in loss of business, industry, including the railroads, began to put greater emphasis on reducing costs through the introduction of more efficient methods, including labor-saving machinery.

It is no exaggeration to say that mechanization has been a life-saver for industry. It has undoubtedly saved the economic life of many railroads. But it has been a boomerang for the unions, causing them considerable loss of membership because of reduced employment in the industries served by them. The reaction of the labor organizations has been to continue their demands for wage increases and other benefits while, at the same time, endeavoring to obtain or perpetuate agreements with provisions restricting the companies in their efforts to introduce labor-saving practices. This has naturally met with strenuous resistance on the part of industry, some segments of which are even seeking to regain ground previously lost to the unions in this area.

Hence, the tense situation prevailing today. We see it, for example, in the steel industry. Some of the keenest observers are convinced there would have been no strike of the steel workers if the union had been willing to relinquish to the steel companies more control over the operation of their own plants. We see it, too, in the railroad industry where the carriers have expressed a determination to make featherbedding an issue in coming negotiations with the operating brotherhoods. And we see it, of course, in the maintenance of way field where the brotherhood is now pushing its program for stabilization of employment.

The matter of working rules has, thus, become a key issue in the current negotiations between labor and management, both in and out of the railroad industry. It is to be hoped that both sides will bring to the bargaining table the statesmanship needed to avoid agreements that would hamstring industry in its efforts to introduce more efficient practices. Such agreements, being basically unsound, would be bad for industry, for the economy and, ultimately, for the worker himself.



ALWAYS SOMETHING MORE YOU CAN DO WITH AMERICAN *DIESELECTRIC* CRANES

Whenever there's any kind of lifting, loading or track maintenance to be done in your yards, there's never any reason why an American DiesELectric should be standing idly by. With interchangeable fronts, and "workhorse" ability, American equipment is always ready to step in on a wide variety of jobs.

On this job for the Northern Pacific Railway, in their Duluth, Minn., yards, a versatile American DiesELectric Locomotive Crane is helping to simplify the installation of a new scale foundation. By using ordinary fill to build temporary crossings over the tracks in the crowded yards, Ready-mix trucks can reach the scale foundation site easily and quickly.

American equipment is expressly designed for time and money saving duties. With interchangeable fronts . . . hooks, clamshell, magnet, dragline, grapple, piledriver . . . American DiesELectric cranes, as well as American Truck, Self-propelled and crawler cranes . . . will help you keep ahead of schedule on all your jobs. For handling any assignment, however difficult, you can always count on American cranes for more dependable, more efficient service. Write us for detailed and illustrated catalog information on American's complete line of equipment.

DERRICKS-HOISTS to 800 tons
REVOLVER CRANES to 400 tons

EXCAVATORS-CRANES to 2 yds.-60 tons
LOCOMOTIVE CRANES to 130 tons

AMERICAN HOIST
and Derrick Company
St. Paul 7, Minnesota

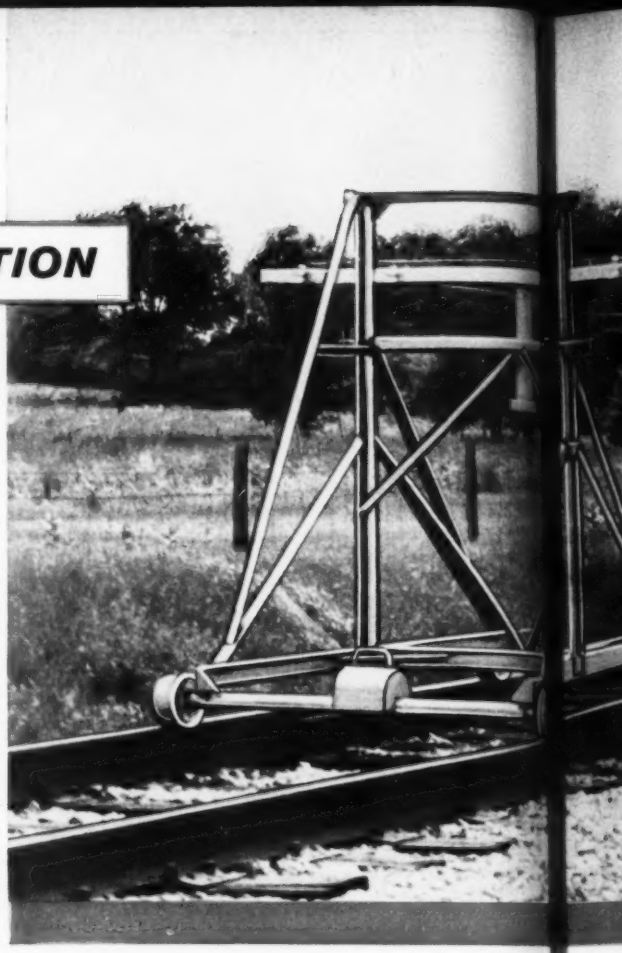
AMERICAN HOIST PACIFIC COMPANY
Special materials handling equipment

CROSBY-LAUGHLIN DIVISION
Drop forged fittings for wire rope-chain

ORGANIZED MECHANIZATION

CUTS COSTS OF SURFACING OPERATIONS

. . . Here are the advantages of using coordinated Nordberg machinery in out-of-face surfacing and Smoothin'



ORGANIZED MECHANIZATION has two vital parts. First, providing the best combination of equipment to do a given job, and second, coordinating that equipment into an efficient working team.

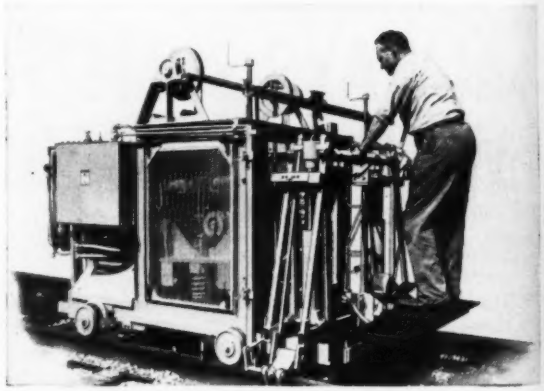
The advantages of Organized Mechanization, utilizing Nordberg Mechanical Muscles include (1) Single source of responsibility for all machines; (2) Each machine is designed and built to work most efficiently with other Nordberg machines; (3) Maximum parts interchangeability between machines; and (4) Training of operators is easier and abilities are readily transferred to operate all machines built and backed by Nordberg.

Illustrated here are five Nordberg machines working together smoothly as a team to do out-of-face surfacing and *Smoothin'* in the best possible way and at lowest cost.

In out-of-face surfacing, the self propelled *Tamping Power Jack*, main unit of the *Trak-Surfacer* team, raises track, tamps ties to hold the raise, and provides propulsion power for itself and the *Trak-Surfacer*. In this operation, the *Trak-Surfacer* uses a stretched wire 125 feet long to form a reference line for the top of the grade rail. Following right after, the new and improved 1959 *Gang Tamper* tamps all ties. Then the *Trakliner* and *Line Indicator* come into play to line tangent and curve track.

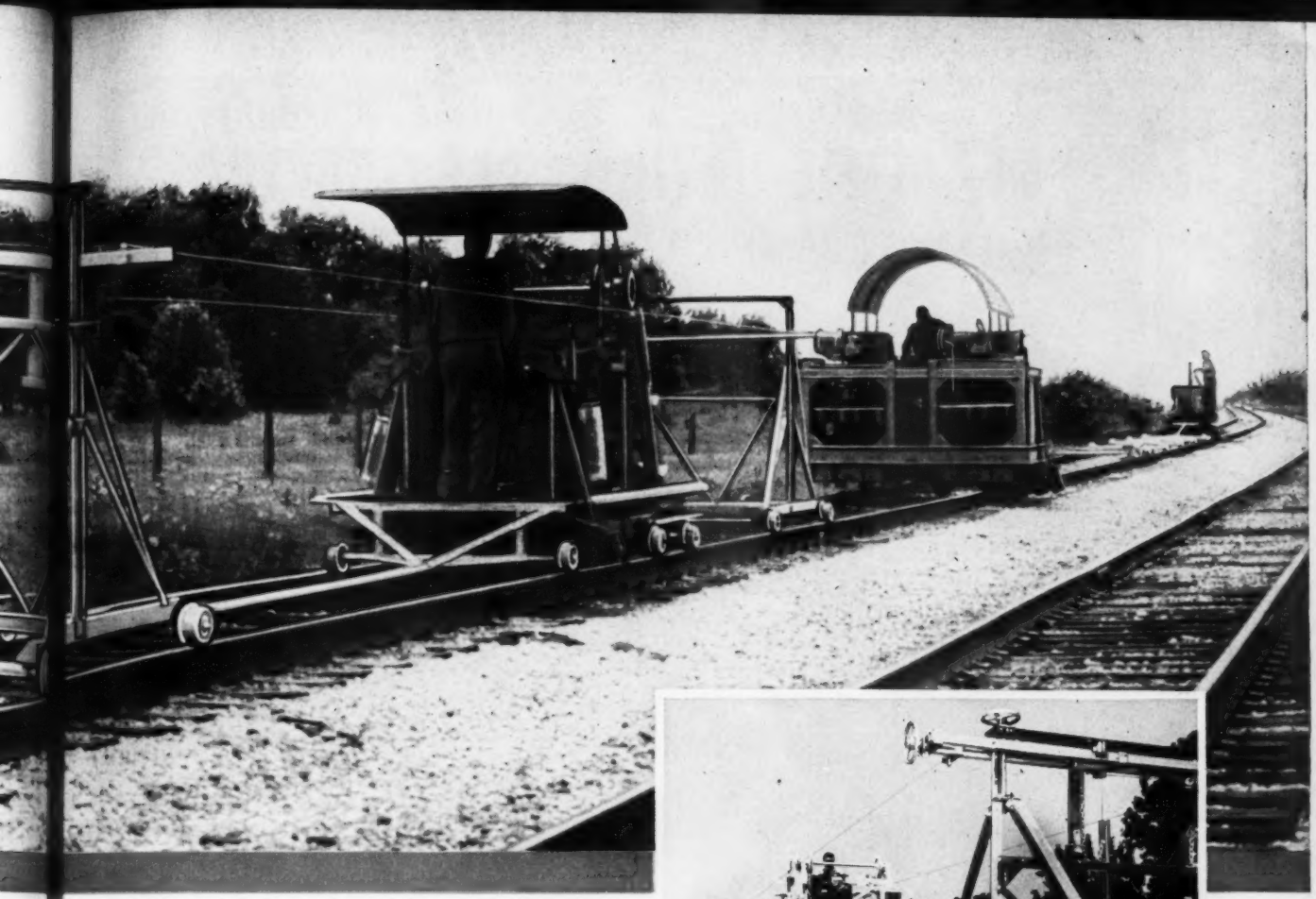
In Smoothin' operations, the same basic Nordberg machines are used, except that the *Trak-Surfacer* uses a shortened wire 50 feet long.

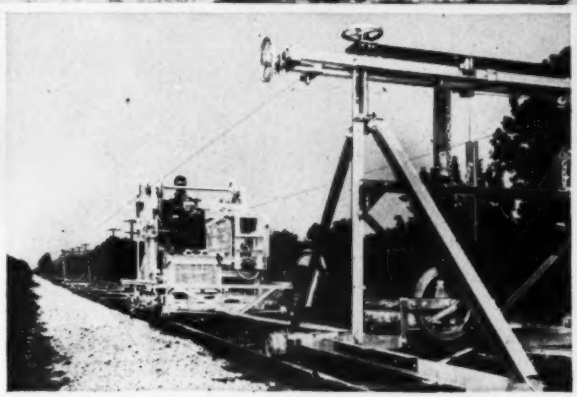
Save money and speed up all your track maintenance operations with *ORGANIZED MECHANIZATION.*



The 1959 Tamping Power Jack has new double vibrator which increases vertical vibration and stabilizes cross-level bubble and pointers.

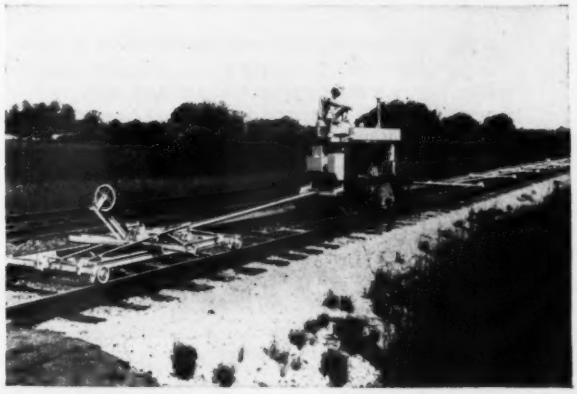
Write For LEASING Plans





Above: Over-all view of a Smoothin' operation, showing the Nordberg Trak-Surfacer—Tamping Power Jack team with shortened wire, Gang Tamper, Line Indicator and Trakliner. **Right:** Tamping Power Jack—Trak-Surfacer team with 125' wire in out-of-face surfacing operation.

The new-improved 1959 Nordberg Gang Tamper tamps by impact and vibration. Tamping effectiveness is improved and tamping speed is increased.



With the Trakliner as the central unit, the Nordberg Line Indicator does a complete job of sighting and lining track. Sighting is done with a 120 ft. wire.

©1959, N. M. CO.

R759

NORDBERG MFG. CO., MILWAUKEE 1, WISCONSIN

NORDBERG

Mechanical Muscles ®

Motorola Handie-Talkie® 2-way radio

TIME-SAVING "TALKING TOOL"

for faster, safer maintenance-of-way

Seaboard Airline foreman uses HANDIE-TALKIE to coordinate men and machines

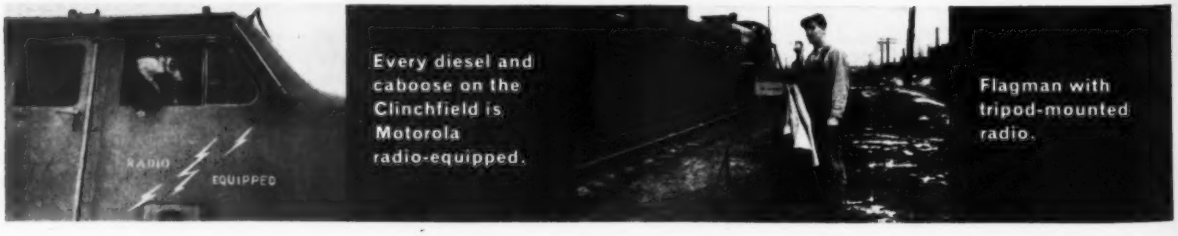
Linking work crews spread over several miles of track . . . spanning rivers and gorges . . . providing direct, instant radio contact between foremen and other supervisory personnel—Motorola HANDIE-TALKIE portable 2-way radios add up to *more work per day and less train delay.*

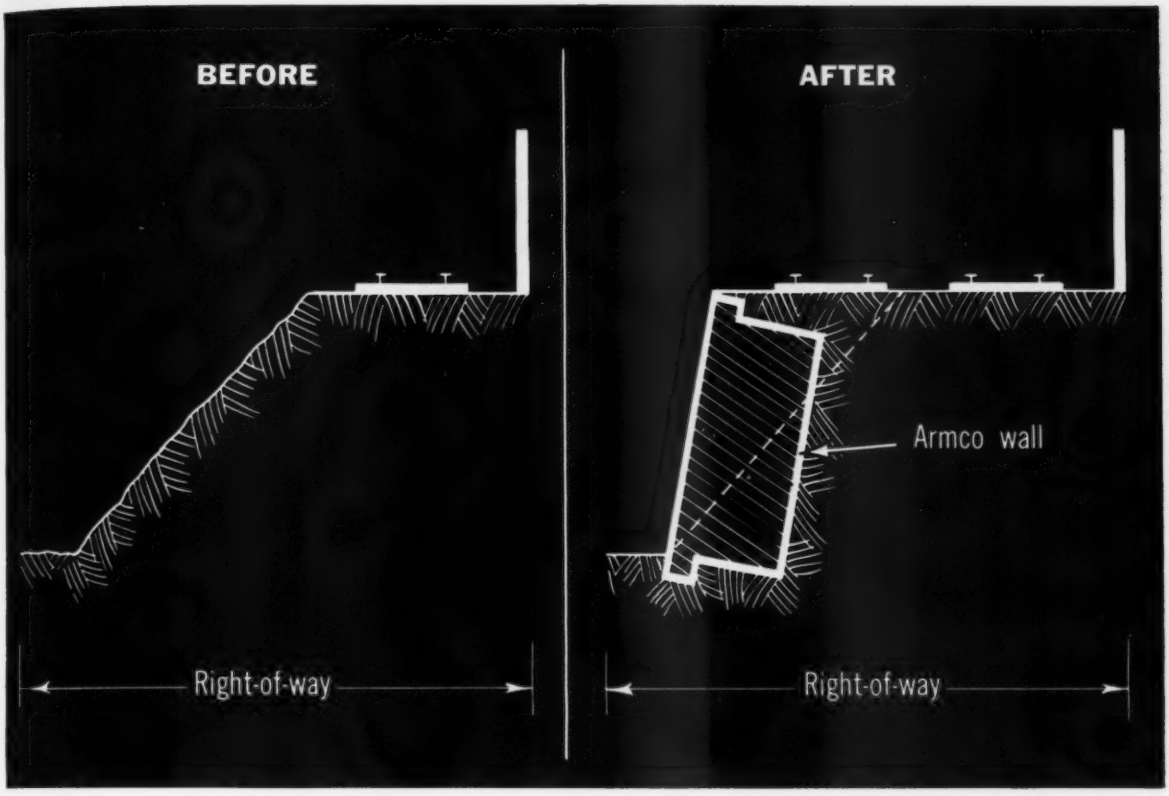
These lightweight portables are railroad "tools" . . . built to meet the day in, day out demands of railroad service—anytime, anywhere. So make sure you have Motorola HANDIE-TALKIE radios on hand when and where you need them.

Your Motorola Railroad Radio Representative will show you exactly how these versatile "talking tools" can save you time, money . . . increase efficiency and promote safety all along the line. Give him a call or write today for complete technical information.

MOTOROLA RAILROAD RADIO

Motorola Communications & Electronics, Inc., 4501 Augusta Blvd., Chicago 51, Illinois
A Subsidiary of Motorola Inc. *"HANDIE-TALKIE" is a trademark of Motorola Inc.*

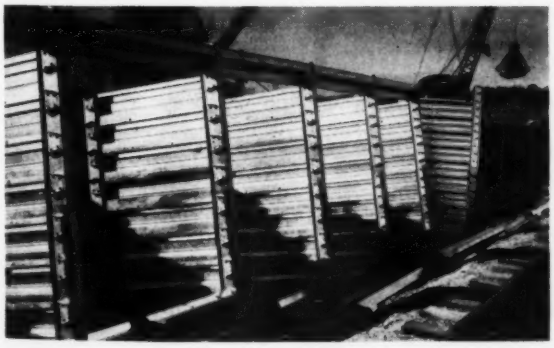

RADIO
EQUIPPED
Every diesel and caboose on the Clinchfield is Motorola radio-equipped.
Flagman with tripod-mounted radio.



How Armco Walls Make Land More Useful

Here's a proved-in-service method of relieving a right-of-way squeeze! In the sketches above, the right-of-way width is the same. *Usable* width is doubled. For details on how you can put all-metal Armco Bin-Type Retaining Walls to work for you—converting waste space to profitable property—ask for the Armco Retaining Wall catalog. Use the handy coupon. Armco Drainage & Metal Products, Inc., 7529 Curtis Street, Middletown, Ohio.

Crew bolts together bins of Armco Wall.



New steels are born at Armco

Armco Drainage & Metal Products, Inc.
7529 Curtis Street, Middletown, Ohio

Send My Copy of The Armco Bin-Type Retaining Wall Catalog

Name_____ Title_____

Company_____

Address_____

City_____ Zone____ State_____

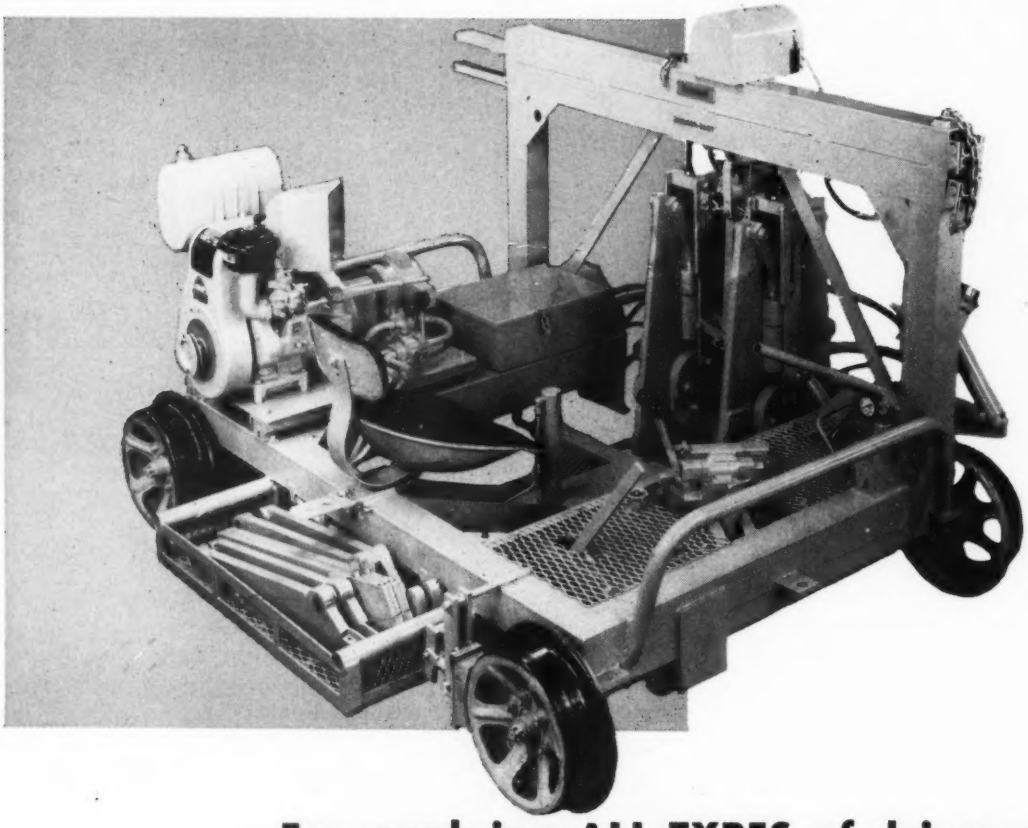
ARMCO DRAINAGE & METAL PRODUCTS

Subsidiary of ARMCO STEEL CORPORATION

OTHER SUBSIDIARIES AND DIVISIONS: Armco Division • Sheffield Division • The National Supply Company
The Armco International Corporation • Union Wire Rope Corporation • Southwest Steel Products

RACINE

Hydraulically operated "Anchor Fast" ANCHOR APPLICATOR



For applying ALL TYPES of drive-on or tool applied hang-on anchors

The only machine, of its kind, in the field. The "Anchor-Fast" is hydraulically controlled and self-propelled. Maximum speed 15 mph. Unit is powered by a hydraulic jack cylinder for "off track" movement or can be revolved 180° for work on opposite rail.

CONSTRUCTION AND OPERATION FEATURES

- Smooth hydraulic pressure with adjustable stops, prevents over driving.
- Positive anchor-to-tie application.
- Machine can be used for either single or box anchoring.
- Powered by a 9.2 hp gas engine with clutch and reduction gear.
- Size of unit—95" x 75" x 56". Wgt. 2300 lbs.

RACINE SECO

RACINE HYDRAULICS & MACHINERY, INC.

Machinery Division **Racine, Wisconsin**

Railway TRACK and STRUCTURES

NEWS NOTES . . .

. . . a résumé of current events throughout the railroad world

A number of recent developments on the railway labor front are indicative of growing tension in this sphere. The AAR placed the featherbedding issue before the public by advertisements carried in 138 major newspapers, in which it referred to the operating brotherhoods' "callous disregard" of the public interest. In a speech, AAR President Daniel P. Loomis stated management's plea for "labor statesmanship" had been answered by "high-pitched hysteria, mud-slinging and name-calling." Whereupon Grand Chief Guy L. Brown of the Brotherhood of Locomotive Engineers told management that a "smear campaign" against workers had dimmed prospects for peaceful consideration of work rules changes.

Meanwhile, negotiations with the M/W brotherhood on the job stabilization issue have reached the mediation stage. Meetings got underway at Chicago on July 15 under the direction of the National Mediation Board.

In coming negotiations with the unions on wage demands, rules changes, and other issues, the carriers may come up with an ace in the hole—strike insurance. They have quietly worked out what is called a "service interruption" insurance policy which provides for a pooling of industry funds through which struck railroads will be indemnified for their fixed charges. To put the plan out of reach of possible court action initiated by the unions it will be underwritten by an insurance company based in the Bahama Islands.

Now in use on three railroads is an electronic pushbutton reservation system which automatically clears and reserves Pullman space and chair car seats in a matter of seconds. Core of the system, known as the Magnetronic Reservisor, is a series of computing machines in which all space is stored on a magnetic drum. Railroads using the system are the Santa Fe, New Haven and New York Central.

In what is described as a "worthwhile breakthrough in use of lightweight corrosion-resistant materials in car construction," the Southern has ordered 1,205 one-hundred-ton roller-bearing gondola and covered hopper cars with bodies of aluminum on steel undercarriages. Because of their size and extensive use of aluminum the new cars will cost more than conventional cars, but Southern economic studies indicate this added initial cost will be more than offset by the higher return produced by greater carrying capacity and lower tare weight.

Carloadings will show an increase of 8.5 per cent in the third quarter of this year compared with the same period of 1958, according to estimates compiled by the 13 Regional Shippers Advisory Boards. Actual loadings are expected to total 6,805,246 cars, compared with 6,272,499 cars in the 1958 period. The estimate was issued before the steel strike started.

The Erie and the Lackawanna have asked the ICC for permission to merge into a single company to be known as the Erie-Lackawanna Railroad Co. The result, it is estimated, would be increased earnings of not less than $13,400,000 a year, before federal income taxes.

Elliston, Virginia, on the Norfolk and Western Railway Company . . . No. 933 (one of two owned by company) cleans drainage ditches in a narrow cut along the right-of-way. It also hauls rocks, spreads stone ballast, slopes drainage ditches, removes vegetation under bridges.

TRAXCAVATORS

SAVE YOU MONEY...BECAUSE ONE MACHINE DOES HUNDREDS OF JOBS

Caterpillar-built Traxcavators can be used on almost every railway maintenance or construction job, along the line or in the yard. They save money because you buy a single piece of equipment for material loading and handling, rock work, digging, ditching, backfilling, pioneering, bulldozing, general cleanup, snow removal, carrying and lifting heavy materials on location.

Whatever the job, a Traxcavator will do it quickly and easily. Excellent stability and fast hydraulic system cut cycle time . . . increase efficient maneuverability even in close quarters. Bucket lift and tilt levers are located for easy one-hand operation.

Traxcavators are built *to last* under tough working conditions. They have a heavy steel main frame, welded into a one-piece unit. The track roller frame, made of box construction, absorbs the loads and stresses of tough treatment day after day. Heavy-duty arms are designed to stand up under the strain of top-capacity bucket loads.

You can count on superior performance from three Traxcavators . . . the 1⅛ cu. yd. No. 933, No. 955 rated at 1½ cu. yd., and the No. 977 2¼ cu. yd. size. There's one to meet your needs. And there is a complete range of quick-change attachments for added versatility. Get production facts and figures from your Caterpillar Dealer. He'll arrange a demonstration. And remember . . . 3,000 dealer stores across the nation are ready to supply you with parts and service when you need them. There's no need to tie up capital in parts when you own Cat machines.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

NEW NO. 933 SERIES F TRAXCAVATOR DELIVERS UP TO 22% MORE PRODUCTION

New 1⅛ cu. yd. bucket — 12½% larger

New 52 HP Cat Diesel Engine — features a new cylinder block, engine balancer for smoother performance, unit-serviced fuel pump, compact and economical side-mounted starting engine

New transmission and heavier final drive gear — coupled with the larger bucket to provide power-matched working balance — balance that gives bigger loads . . . in faster time . . . for higher production

New high reverse speed — 3.67 MPH further reduces cycle time

New operator efficiency — mechanical advantage of steering clutch brakes increased 30%, new larger seat provides unmatched operating comfort

Plus these proven features — exclusive oil clutch, automatic bucket control, 40° tilt-back, heavy-duty undercarriage, high-seat vision

CATERPILLAR

Caterpillar, Cat and Traxcavator are Registered Trademarks of Caterpillar Tractor Co.

THE NO. 1 RAILROAD CONSTRUCTION EQUIPMENT

IMPERFECTIONS in track surface are revealed by the Midget Surfacer by means of two 50-ft stretched wires and a pointer mechanism.

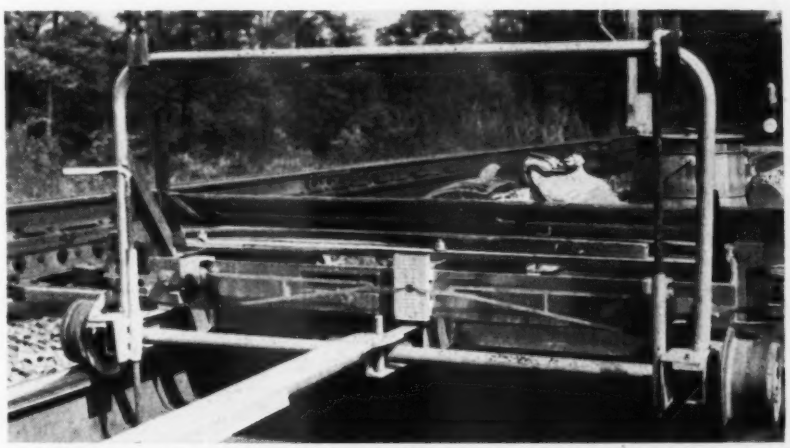
New aid to better track surface

"Midget" wire device detects imperfections in track surface and cross level. It's designed for use in spotting track or for working behind raising operations to speed up the work and to produce additional refinements ahead of the production tamper.

● Since early 1959 one of the Pennsylvania's track-surfacing gangs has been using a relatively short wire device for "ironing out" any irregularities in surface that remain behind the raising operation. This is a new Nordberg device called the Midget Surfacer. When pushed along the track it detects and measures any imperfections in surface and cross level.

The Midget Surfacer is designed for two specific purposes. When raising and surfacing high-speed main track, it provides a means for checking and maintaining the quality of the track raise while enabling the power raising to stay ahead of the production tampers. Instead of raising at three or four points per rail length for high-speed operations, the Midget permits the raising points to be extended to the joints and centers, thus substantially speeding up the raising work. The Midget also is designed for spotting up track which does not require a general raise or use of production tampers.

The new device bears some resemblance to the Trak-Surfacer in that it relies upon stretched wires and indicators to do the "sighting." It includes a four-wheel carriage which carries a shelf on each side for a hand track jack, a tray for tools and supplies, brackets for carrying a standard track level, and an indicator mechanism. Two two-wheel aluminum buggies ahead of the carriage and one behind it stretch two wires a distance of 50 ft. The wires are positioned one over each rail and 8 in above it.

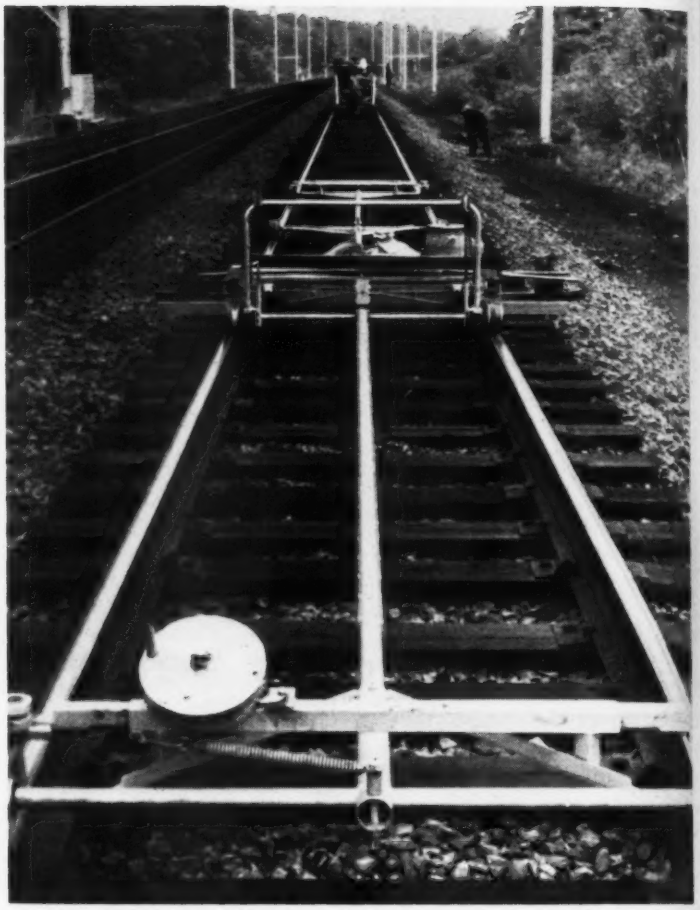


CLOSE-UP view of the main carriage of the Midget shows the "sighting" wires, indicator mechanism, tool tray and side shelves for track jacks. Drop-pin anchors prevent rolling.

Each wire passes over the outer end of a pointer mechanism on the four-wheel carriage which is located 20 ft in advance of the rear anchorage. The inner ends of the pointers move on a common scale placed on the rear of the carriage. The gradations of the scale are ⅜ in apart and, since the scale end of the pointer moves three times the distance of the outer end, each gradation represents a ⅛-in change over the rails.

In the PRR gang the Midget Surfacer ▶ is operated directly behind the Trak-Surfacer ▼

1 LIGHT LIFT was made by a power Tamping Jack working with a Trak-Surfacer.



2 END BUGGIES of the Midget stretch the wires a distance of 50 ft. Rear buggy (foreground) is 20 ft from pointer mechanism and on corrected track.

If the track surface is on a true plane, both pointers of the mechanism stand at zero on the scale. The two wires, one over each rail, and their respective pointers search out surface irregularities in each rail independently of the other. Thus, if the Midget were to be moved over tangent track which is uniformly out of cross level, or if moved over curved track having uniform super-elevation, the pointers would read zero on the scale as long as the surface was perfect. The track level carried is to reveal inaccuracies in cross level. It is held in brackets an exact distance above the top of rail.

Hence, by merely observing the number of gradations the pointers are off zero, and whether above or below it, the trackmen can quickly determine on which side a track jack is to be used and the number of notches to raise the rail. The machine is rolled forward and backward before setting the jack to locate the lowest spot. The jacking is done under the carriage and the nearest tie under the pointer mechanism is tamped.

With the jack carriage of the Midget Surfacer 20 ft ahead of the rear wire mechanism, the latter is at a joint when the jack carriage is at a center. The front buggy, being 30 ft ahead of the pointer, is approximately at a quarter when the pointer is at a joint or approximately at a joint when the pointer is at a quarter. This tends to minimize the effect of irregularities which might ordinarily be expected to occur mostly at joints. The rear buggy, being on corrected track, should eliminate any irregularity from its effect on the wire.

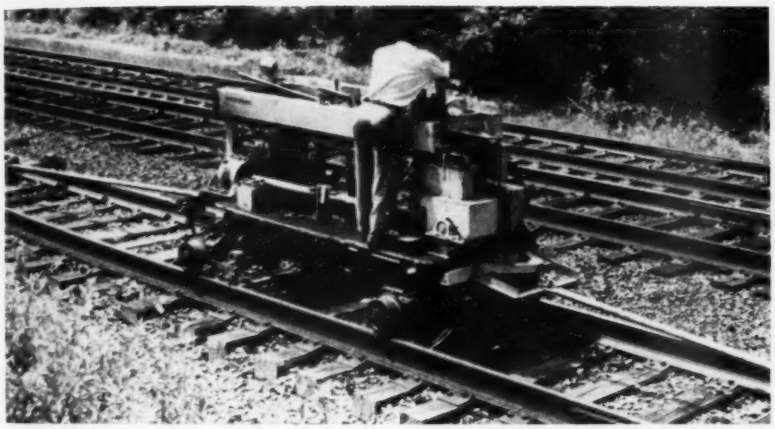
How Used on Pennsylvania

The Midget Surfacer was recently seen in operation on the Pennsylvania where, along with other machines, it was engaged in giving a light lift to the No. 2 northbound main track between Gwynn, Md., and Vern interlocking plant. This is in the territory of Track Supervisor C. C. Lint. For this work he had a gang of 11 men, including a foreman and an assistant foreman, and six work-equipment units. The latter consisted of a Nordberg Tamping Power Jack used in conjunction with a Trak-Surfacer, the Midget Surfacer, a Plasser production tamper and a Nordberg Trakliner used in conjunction with a Line Indicator.

The Trak-Surfacer was set to produce an average track raise of 2 in by the tamping jack. This machine was being used to raise the joints and centers and bring the track to the desired cross level. Manpower assigned to the Trak-Surfacer consisted of the tamping jack operator.

Following behind the Trak-Surfacer came two trackmen pushing the Midget Surfacer. It was rolled along the rails until a low spot was encountered. The device was then moved back and forth until the lowest point was located as shown by the indicators, after which

3 PACEMAKER of the gang was this tamping machine. To assure maximum production, the gang was given absolute occupancy of the main track on which it was working.



4 TRAKLINER, working with Line Indicator, was equipped with lights, as were the other machines of this gang, to permit surfacing at night in dense-traffic territory.

a pin anchor was dropped to the ballast to prevent the device from rolling. The men then moved to the side shown to be low, jacked up the rail as necessary to correct the low spot by bringing the pointers to zero on the scale, and tamped the nearest tie.

The following unit was the Plasser tamper. This machine was served by two equipment operators and two trackmen. One of the latter was a watchman who pulled a cord to sound the machine's siren on the approach of trains on any of the main tracks. The other trackman forked stone ballast to the ends of the cribs where the ballast was low. The production tamper worked continually, making one full insertion at every tie. The two operators spelled each other in its use.

The Trakliner and Line Indicator brought up the rear. This combination was worked by a machine operator under the supervision of an assistant foreman. The assistant foreman also read the curve ordinates.

This gang also handled the distribution of necessary additional ballast. A Kershaw Ballast Regulator with broom attachment was used for shaping the shoulders and sweeping the ties clean.

No flagmen were necessary for the protection of this outfit from trains on the same track. The superintendent had issued instructions that the gang was to have absolute use of the track. In the event that the track would have to be taken back into service, the gang was equipped with a portable radiotelephone outfit mounted on a push car. A loud siren was provided on the push car for summoning the foreman to the telephone in the event of a call from the dispatcher.

The production of this gang was averaging 1100 ft per hr of on-track time. Because of travel time the average daily output was approximately 6,500 ft.

Track Supervisor Lint explained that, before use of the Midget Surfacer, he employed four trackmen for handling jacks behind the raising operation, with the foreman doing the sighting. Now, he said, the Midget and two trackmen do a better job, the results of which show up in the superior riding qualities of the track under 80-mph passenger trains.

Can surface at night

It was also pointed out that the Midget Surfacer, along with the Trak-Surfacer and Line Indicator, make it possible to surface and line track at night. The Pennsylvania has several locations, such as in suburban territory, where traffic is too dense during daylight hours for the efficient use of on-track machines. Formerly, however, daylight was needed for sighting while removing surface and line irregularities. Now with the three wire-type devices to do the "sighting," the work can be done at night when traffic is lighter.

To test this reasoning, the Pennsylvania fitted the machines with automobile generators and with spot and floodlights. A number of lights were placed on the Tamping Power Jack and Trak-Surfacer to illuminate the level bubble, the indicator pointers, the ties and ballast cribs and the track immediately ahead of and behind the power jack. With these areas visible, the operator could work these units at night as well as in the daytime.

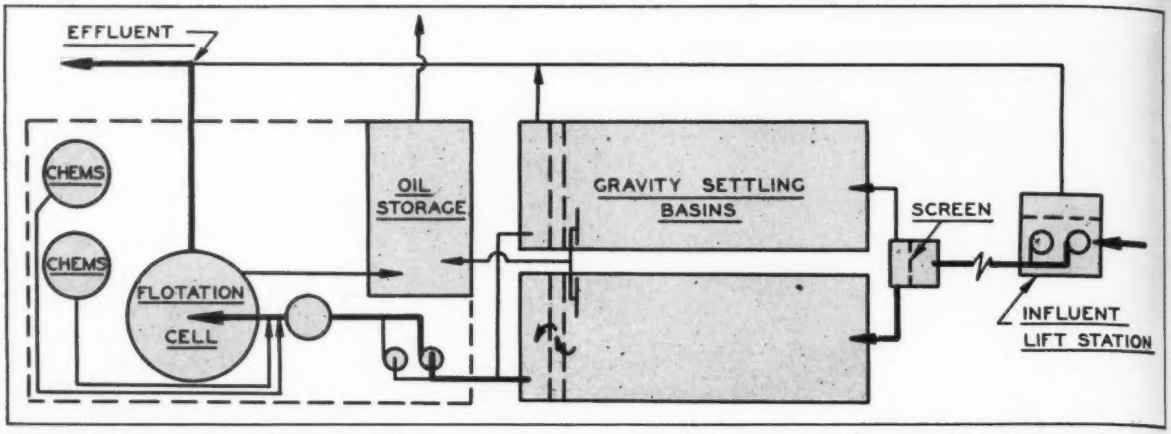
The men working with the Midget Surfacer were furnished with two Justrite Pendragon electric hand lanterns. One was used to observe the indicators on the scale and the other to give visibility when setting the jacks and raising and tamping the track.

In addition to the standard headlights on the Plasser tamper, another floodlight was added to illuminate the ballast and tamping bars.

An automobile generator was mounted on the Trakliner to power lamps placed on each side of the machine. These light the indicator pointer and the track where the lining shoes are set.

For auxiliary lighting, electric hand lanterns were also issued to the operators of the tamping jack, the tamping machine and the lining unit.

It turned out that the production of this gang at night was about the same as during daylight hours. The quality of the work was likewise equal to that done during the day, according to officers of the road.



MOVEMENT of waste through the plant and the general method of treatment are illustrated by this simplified layout drawing. Key feature is the flotation cell in which dissolved air, coming out of solution, attaches itself to emulsified oils and greases.

CONTROL BOARD for regulation of chemicals required in adjustment of pH factor.

Treats waste with dissolved air

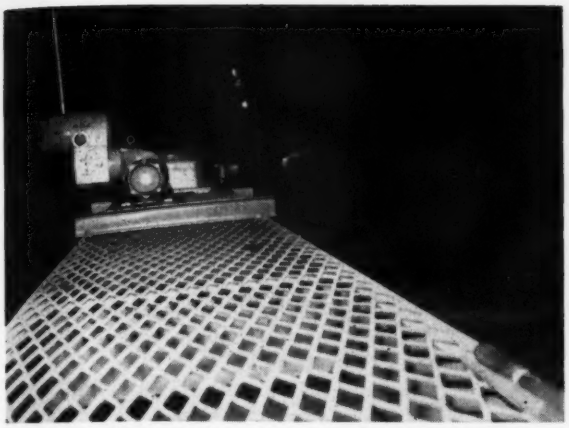
Discharge from several terminals on the Union Pacific is being treated by a method involving two stages. The first consists of conventional gravity separation. The effluent from this stage is then treated by a method that involves the use of "pressurized dissolved air" to remove most of the remaining contaminants.

● A technique called "pressurized dissolved air flotation" is helping the Union Pacific meet local and state requirements applying to the discharge from railroad terminals.

In recent years this method has been incorporated in waste-treatment plants installed at six locations on this road. In all cases these plants have been approved by the appropriate bodies assigned to the enforcement of regulations designed to prevent stream pollution. In most states served by the UP the standards governing the discharge

CHEMICALS used in treatment of waste material are mixed in these tanks. The chemicals are added immediately ahead of the flotation cell.

FLOTATION CELL, or separator tank, in which the contaminants are separated from the effluent.



OIL AND GREASE, floated to the surface in the flotation cell, are skimmed off by the device shown in this view.

WASTE OIL removed from effluent being pumped into tank truck for disposal. It is used mostly for oiling roads and drives.

of railroad wastes directly into water courses require less than 25 mg/L (milligrams per liter) total oil and grease, no floatable oil and grease, a pH factor of between 5 and 9 and suspended solids below the amount which would result in visible sludge deposits or color changes.

Each of the plants installed on the UP actually incorporates two methods of treatment. The first, or primary stage, involves the use of gravity separation to remove the largest percentage of the free-floating oil and the free-settling solids or grit. In the secondary stage the pressurized air-flotation principle is used to reduce the amount of remaining foreign material in the effluent to or below allowable levels.

In the first stage, which is preceded by a bar screen, two rectangular baffled separation basins are used. Free-floating oil accumulating ahead of the baffles is skimmed off periodically and transferred to a storage tank. When sufficient sediment has accumulated in one of the basins it is taken out of service and the material at the bottom removed, generally with a clamshell bucket, which loads it into cars for disposal.

The effluent coming from these gravity tanks generally has an analysis of approximately 100 mg/L of residual emulsified oils and a pH ranging from about 7.2 to 11.8. Since these characteristics will not, in most instances, meet discharge requirements, further treatment is necessary, which is carried out in the secondary stage.

The pressurized dissolved air flotation technique, as used in the second stage of treatment in the UP plants, is a development of Pacific Industrial Engineering, Inc., Pasadena, Calif. Basically, this technique consists, according to the company, of (1) a means of producing finely divided air bubbles in the liquid being treated, (2) a means of attaching these bubbles either mechanically or chemically to the contaminants to be removed, (3) a quiescent flotation tank of low velocity where the foreign material may rise and separate, and (4) a means of removing the concentrated floated contaminants from the top of the tank, the clarified liquid from near the center and any heavy solids from the bottom.

How air flotation works

Here's how it works in actual practice, as applied in the plants on the UP:

Because the flow of waste fluid at any given location generally varies widely during the 24-hr. period, the overflow from the primary settling basin is discharged to a wet well located ahead of the secondary treatment. This wet well, it is explained, should provide a minimum of five minutes detention time. At periods of low flow the effluent from the secondary treatment is recycled to the wet well by a float-operated valve.

The effluent is then pumped from the wet well into a retention tank. A measured amount of air is added on the suction side of the pump and the mixture of air and water is pressurized at approximately two atmospheres gauge. It then passes into the retention tank where the air goes into solution.

From the retention tank the solution is carried to a circular floatation cell. At a point between the retention tank and the flotation cell the pressure is reduced to atmospheric pressure by a constant-pressure diaphragm-operated valve. In the flotation cell, where the retention time is approximately 20 min, the dissolved gas comes out of solution. In so doing it attaches itself to emulsified oils and greases as a nucleus and floats them to the surface where a rotary scraper removes them to a sludge-holding basin.

A scraper is also provided in the bottom of the flotation cell to remove any grit that may get past the primary settling basins. Generally this grit is recycled to the primary basins for removal.

Provision is made for adjustment of the pH factor by conventional control equipment. With this equipment sulphuric acid from a storage tank is added ahead of the secondary stage. To assist in this procedure and to promote coagulation of the emulsified oils, small amounts of aluminum sulphate and sodium silicate in the activated state are also added. These materials are introduced immediately after the effluent has passed the pressure release valve.

The experience of the Union Pacific is that the pressurized dissolved-gas method results in effluents in which the total amount of oil and grease is well below 25 mg/L. The oil and grease removed by the plants is used mostly for oiling roads and drives on the company's property.

The first waste-treatment plants of this type to be installed by the UP were built in their entirety under contract. In more recent installations the practice has been for the road to construct the basins, buildings, etc., with its own forces, after which the treating equipment is installed by the engineering firm.

Wheels for trackwork grinding

- Types of abrasives
- Types of wheels
- Wheel markings
- Matching wheels to the job
- Tips on operation

By C. H. Hill, Sr.
Abrasive Engineer (Retired)
The Carborundum Company

● The use of grinding wheels to prolong the life of rails and to smooth them for the passage of trains are familiar to all track maintenance people. Less familiar to them are the abrasives used in the manufacture of grinding wheels, the type of wheels available and why one type of wheel is better suited for a particular operation than another.

Types of abrasives

There are two types of manufactured abrasives. One type, fused aluminum oxide, Al_2O_3, is used for grinding materials of high tensile strength and is thus the type utilized for all rail grinding and slotting work. The other type, silicon carbide, SiC, is used for grinding materials of low tensile strength. Aluminum oxide is manufactured from bauxite, a soft ore. The water and oxides contained in the ore are removed and the remainder mixed with carbon and iron in small amounts, depending on the bauxite and the type of abrasive required. The carbon (coke) reduces the silicon oxide to form silicon with which the iron forms a magnetic ferrosilicon button. This is subsequently removed from the purified fused alumine by magnetic machines. It is then fused in an electric arc-type furnace at approximately 2800 deg F.

The other type of manufactured abrasive, silicon carbide, is an exclusive man-made product, not being found in a natural form. The material is made from selected silica sand and coke.

These two materials are mixed together, along with sawdust and salt. The entire mixture is placed in a horizontal furnace where it is burned at 4200 deg F.

The sawdust serves to make the mass porous so that the gases will escape during the burning process. The salt acts as a purifying agent which burns away in the horizontal furnace leaving silicon carbide.

Types of wheels

Various shapes of grinding wheels are made. Some of these are as follows:

(1) Type 1 wheel
(2) Cup wheel
(3) Disc wheel
(4) Slotting wheel, actually a Type 1 wheel

A Type 1 wheel has straight sides with a hole in the center that fits the spindle of the grinding machine. This wheel provides only a small contact of its periphery with the work being ground. A cup wheel, on the other hand, provides a much larger area of contact with the work. These wheels can be used on practically all rail-grinding operations except slotting.

The disc wheel has a steel plate applied to one side and is used for grinding switch points. Grinding is done on its side instead of on its face. It is frequently used in place of the cup wheel since the area of contact is greater.

A fairly recent development is a reinforced slotting wheel that provides far greater safety than the average wheel. It is made in various thicknesses and has a longer life. In addition, it will safely stand a great deal more side pressure.

A grinding wheel is, in general, engineered for a specific operation. For this reason several types and sizes of grain are made in each of the two types of manufactured abrasives. Grains are also made in different sizes —for instance, a 14 size grain is one that has been sifted through a screen having 14 threads to the linear inch, or 196 apertures per square inch. The actual making of a grinding wheel is a long technical process that would take a good-sized book to explain in detail. Suffice it to say that they are made in many combinations of grain and grain size, and wheel grade, structure and bond types.

Basic bond types are glass, clay, resin, rubber, shellac and oxychloride. The resin bond is much stronger and has a greater tensile strength than the vitrified bond.

Each company that manufactures grinding wheels has given its own trade name to the abrasive grain used, that is to either aluminum oxide or silicon carbide. Each company also marks its wheels with a standard marking which indicates the grading of the wheel. In order to make this clear we

Four types of wheels commonly

Type 1 wheel

Slotting wheel

can take a marking, such as HA14-O-B5, and explain the symbols as follows:

H—Type of grain, "H" being a type of basic aluminum oxide grain
A—Type of abrasive, "A" being aluminum oxide
14—Size of grain
O—Grade, or hardness, of the wheel*
B—Type of bond, "B" being resinoid
5—Manufacturer's symbol for identification of type of basic bond

It should be noted, however, that grinding wheels that are marked in similar symbols by different companies may not function exactly alike.

Match wheel to job

Since grinding wheels are engineered for specific operations it is necessary that care be used to correctly match the wheel to the job to be performed.

There are some railroads still using vitrified wheels. This type of wheel can be operated at a maximum safe speed of 6500 surface feet per minute whereas resinoid-bonded wheels can be safely operated at 9500 sfpm.

These speeds can be used for grinding 95 per cent of materials being ground. Slower or faster speeds can be used in only a few instances and then only when recommended by the grinding-wheel and grinding-machine manufacturers.

Old machines, however, which were designed for using vitrified-bonded wheels, should not be operated at resin-bonded-wheel speeds. Generally speaking, the grinding wheel spindle is not large enough and the wheel guard not strong enough. It is far better to replace the old machine with a new one, designed and built for high-speed grinding.

A grinding wheel that is used for any operation on rail grinding or slotting should be self-sharpening. This means that when the working grains become dull the bond should break down, but not in excess, and new sharp grains present themselves to the cutting face of the wheel. The proper bond and grade of wheel controls this factor.

Manganese is one of the hardest and toughest alloys to grind and special wheels have been developed for this purpose. A tough grain and a strong bond are required since a speed of 9500 sfpm must be used. For this reason resinoid-bonded wheels are normally used for this work. However, either a vitrified bonded or resin-bonded wheel can be used providing the proper grain and grade of abrasive and type of bond are selected, each type of wheel to be run at the proper speed. The resinoid - bonded, high - speed disc wheel is the most efficient grinding wheel for removing metal from driver burns preparatory to building them up by welding, although cup wheels are also used.

Tips on operation

To get the full capacity from operation of the disc and cup wheels, a fairly heavy pressure should be used, passing the wheel back and forth to make the wear even on the side of the face. This applies to all surface grinding and for grinding manganese, steel and steel alloys. The wheel, no matter what size, bond or shape, should never be allowed to dwell in one place while grinding. Passing the wheel back and forth generates less heat and keeps the grinding face of the wheel from developing ridges and grooves.

To operate a slotting wheel, it should be brought down until it almost touches the work. The cut should be commenced slowly until the wheel gets started in the cut. The pressure should then be increased until the wheel generates very little heat. A slow cut causes the grain to dull and the work to heat up. This may cause the wheel to lead off, that is, not make a square cut.

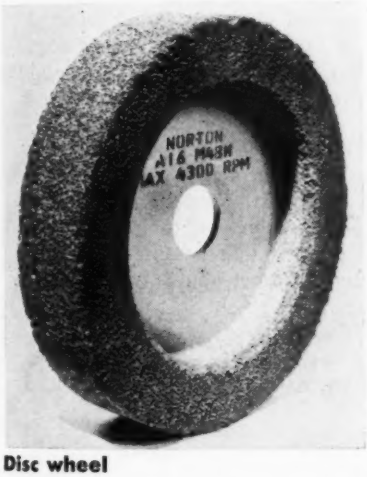
*Hardness is indicated by letters of the alphabet with the scale ranging from A (softest) to Z (hardest).

Recommended wheels for trackwork grinding

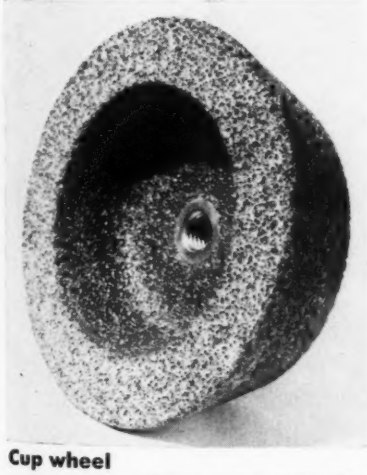
(Courtesy The Carborundum Company)

Operation	Abrasive	Grit	Grade	Bond
Frogs & Switches—Cup & disc wheels, 4-10-in diameter	HA	14	O	B5
Joints (slotting 1/8-in) 6-8-in wheels	A	30	R	B36
(Reinforced wheels)	A	24	T	BFC
Joints (beveling) 6-8-in wheels	A	303	U	B36
Overflow removal—6-10-in wheels	A	163	P	B7
Portable grinding, miscl.				
(8000-9500 sfpm) 6-8-in wheels	TA	163	P	B7
(5000-6500 sfpm) 6-in wheels	A	30	P6	V30
Surfacing (general) 8-12-in wheels	TA	163	P	B7
Switch points—8-10-in wheels	HA	16	P	B5
Weld surfacing 8-12-in wheels	HA	14	O	B5

used in trackwork grinding



Disc wheel



Cup wheel

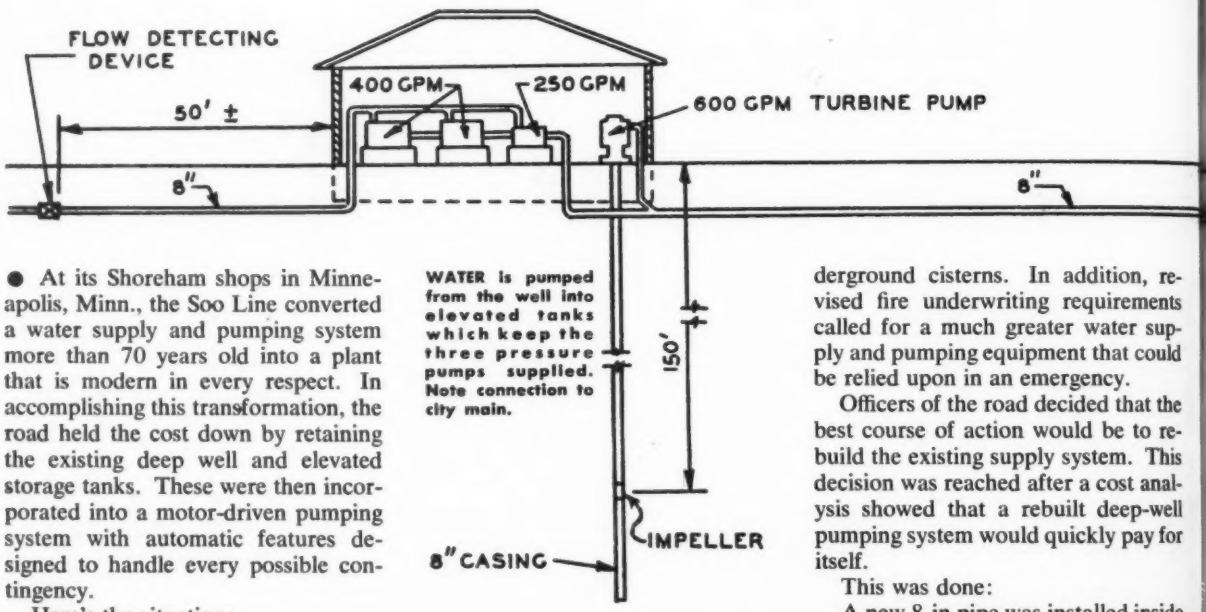
(Photos courtesy Norton Co.)

Retains existing facilities in . . .

Modernizing old water system

Problem: How to modernize most economically a water-supply installation that's nearly three-quarters of a century old. The source is a deep well with an air lift and the pumps are steam driven. The facilities are either obsolete or worn out.

Solution: Utilize the original well and the existing elevated storage tanks. Install a new electric deep-well turbine pump and three electric centrifugal pressure pumps. Then add devices for controlling the entire system automatically.



WATER is pumped from the well into elevated tanks which keep the three pressure pumps supplied. Note connection to city main.

● At its Shoreham shops in Minneapolis, Minn., the Soo Line converted a water supply and pumping system more than 70 years old into a plant that is modern in every respect. In accomplishing this transformation, the road held the cost down by retaining the existing deep well and elevated storage tanks. These were then incorporated into a motor-driven pumping system with automatic features designed to handle every possible contingency.

Here's the situation:

The pumping system at the shops was steam driven and consisted of an air lift which brought water up, through a 10-in pipe, from a deep well into a cistern under the pumphouse. Reciprocating pumps then elevated the water into two 50,000-gal elevated storage tanks. From this point it was fed into the distribution mains. Later, as Minneapolis grew out to the shops, a city water connection was installed to provide a standby supply.

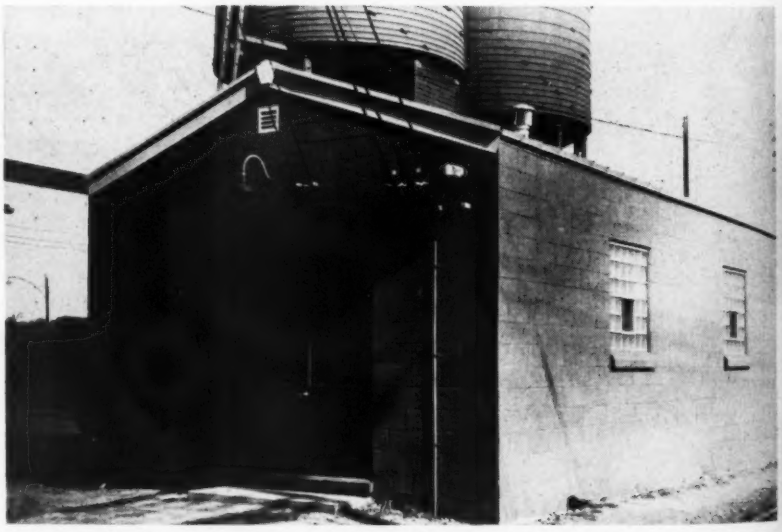
Why replacement necessary

The equipment had reached the point where the pumps were worn out, the building housing them needed replacement and, as revealed by an electrolog, the well casing had developed many holes. To further complicate matters, public health standards now prohibited the use of air lifts and underground cisterns. In addition, revised fire underwriting requirements called for a much greater water supply and pumping equipment that could be relied upon in an emergency.

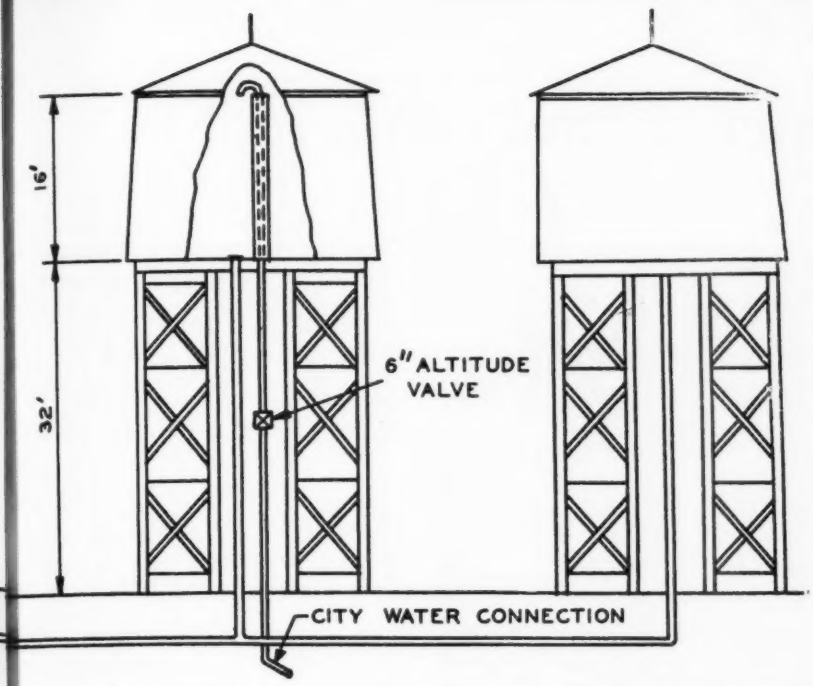
Officers of the road decided that the best course of action would be to rebuild the existing supply system. This decision was reached after a cost analysis showed that a rebuilt deep-well pumping system would quickly pay for itself.

This was done:

A new 8-in pipe was installed inside the original 10-in casing and extended



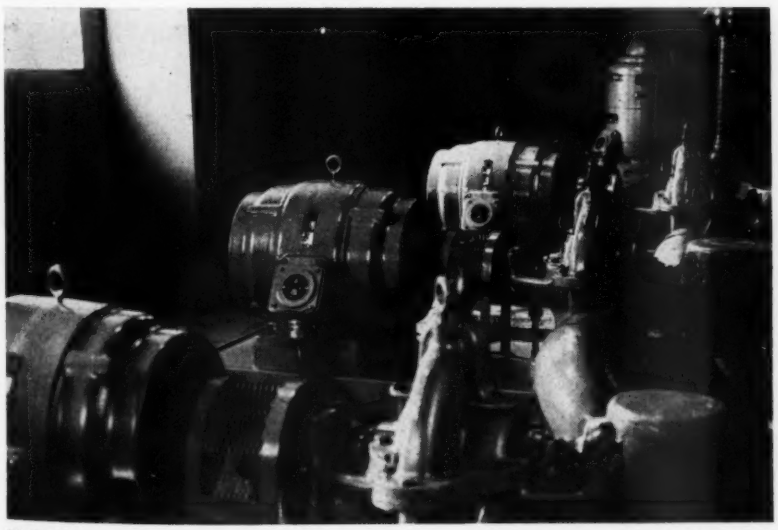
CONCRETE-BLOCK pumphouse has Armco Steelpx roof and ceiling. The two elevated storage tanks and the deep well are part of the original water supply system.



through the old cistern to ground level. The space between the two pipes was sealed with concrete at the ends to meet health department requirements. The old cistern was completely filled with compacted sand.

A concrete-block pumphouse was constructed directly over the old well. The roof of the building and the ceiling consist of Armco Steelox prefabricated panels. The ceiling was insulated. A ventilator was installed on the roof and extended through the ceiling. To provide natural light and additional ventilation a number of 4-ft by 4-ft glass-block windows were provided in the side walls, each with a 16-in by 16-in ventilator.

Located inside the pumphouse are a 600-gpm electric, deep-well turbine pump, three electric centrifugal pumps, two having a capacity of 400 gpm and the third 250 gpm, and an automatic control cabinet. The turbine pump delivers water from the well to the elevated storage tanks. From the tanks water returns to the pumphouse through another main, where it feeds the centrifugal pumps to keep the system under a pressure of 100 psi at all times. This, then, is the main function of the old elevated tanks—to keep pressure pumps supplied with water. Thus, the storage capacity is used to give the deep-well pump a chance to balance out fluctuations in supply and demand. In this way it is possible for the new system to handle fire-fighting and other peak demands. Use of the tanks also made it possible to reduce the size of the well casing without reducing the immediate capacity.



INSIDE the pumphouse are located the electric deep-well turbine pump (top right), three electric centrifugal pumps (center) and automatic control cabinet (top left).

The automatic control cabinet is actually the brains of the entire operation. The control system, which was specially designed for this installation, includes pressure switches which automatically sequence the pumps to provide a capacity which exactly balances the demand with the minimum connected horsepower. In this way pressure stability is maintained with minimum power consumption. In addition, surges are evened out by scheduled delays in the starting and stopping of the pumps and also by the characteristics of the pumps themselves. The controls also automatically compensate for friction loss.

Various safety features have been incorporated in the new system. Some of the more important are as follows:

(1) On those occasions, rarely expected, when the deep-well pump cannot keep up with the demand, the supply in the tanks will drop to a predetermined level. When this level is reached a valve will open, causing city water to be admitted into the tanks through an overhead inlet.

(2) If the deep-well pump should fail for any reason an alarm horn sounds automatically and an alarm light, placed above the pumphouse, is also automatically switched on.

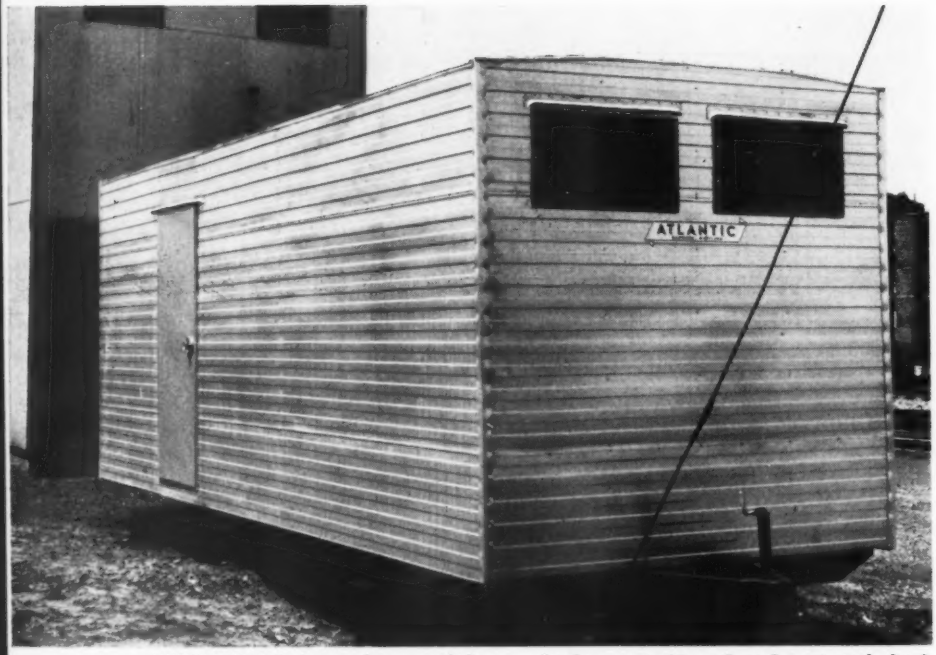
(3) If the alarm goes unanswered and the reservoir water keeps dropping below a second critical level, a second alarm sounds and the pressure pumps are automatically cut out to prevent damage.

(4) Should any of the three pressure pumps fail, the others will automatically take over and the alarm system activated.

The control system was designed and furnished by the Automatic Control Company, St. Paul, Minn. The special pump arrangement was provided by Fairbanks, Morse & Co. Design and construction of the water supply system was carried out by the railroad under the general direction of T. R. Klingel, chief engineer.

It's a wheeliess trailer . . .

Prefab locker-tool room unit



THE TEN-MAN locker-tool room unit has an aluminum exterior and mesh-protected aluminum windows. Connections were made to water, sewer and electric lines.

The Jersey Central has recently placed in service a trailer-type unit that is towed to the site, set on timbers and the wheels removed. It then becomes a locker-tool room for the section forces.

● At Bayonne, N. J., the Jersey Central recently installed a new type of section house. It is a compact, prefabricated locker-tool room unit that is built in the form of a highway trailer.

The unit was fabricated at Baltimore, Md., and delivered to the site on rubber-tired wheels. There, it was set on a foundation consisting of two 10-in by 10-in by 8-ft treated timbers, the wheels removed and connections made with water, sewer and electric lines. The unit was then ready for business. The wheels were returned to the plant of the manufacturer.

In overall dimensions the locker-tool room unit is 8 ft wide and 21 ft 3 in long, with the inside measurements being 7 in less. It is intended for the use of a gang consisting of a foreman and 9 men. Inside the unit are nine 15-in by 18-in steel lockers, a lavatory and an oil heater. Electric lights are recessed and outlets are provided for the use of small tools.

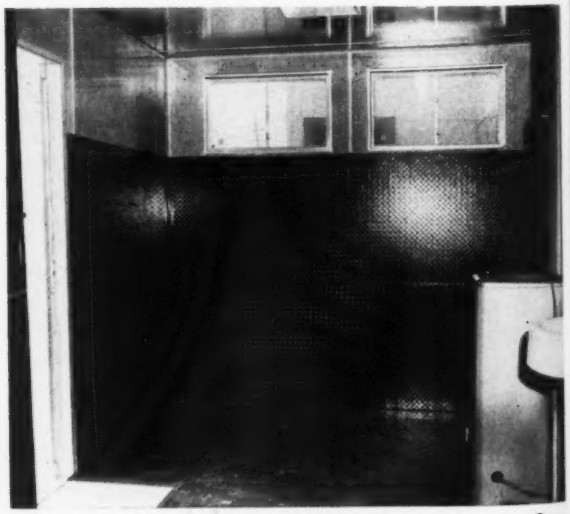
The unit has these principal features of construction:

(1) The exterior sides and roof consist of aluminum sheets secured with zinc iridited screws.

(2) The interior walls and ceiling are constructed of ⅜-in plywood with a varnish finish. The walls at the tool-room end are covered to a height of

(Continued on page 37)

INSIDE the unit are nine steel lockers, a lavatory and an oil heater. Walls are covered with varnished plywood.



STEEL PLATE with raised diamond pattern is used to cover floor and a portion of walls at tool room end.

GRAND CANYON LINE

FEATHER RIVER ROUTE

SUNSET LINES

ROYAL GORGE LINE

LINE OF THE 'BLUE STREAK'

RAIL DESIGNS

ROUTE OF ROCKETS

a prime medium for western railroads achieving economic objectives of simplification or standardization

MAIN STREET OF THE NORTHWEST

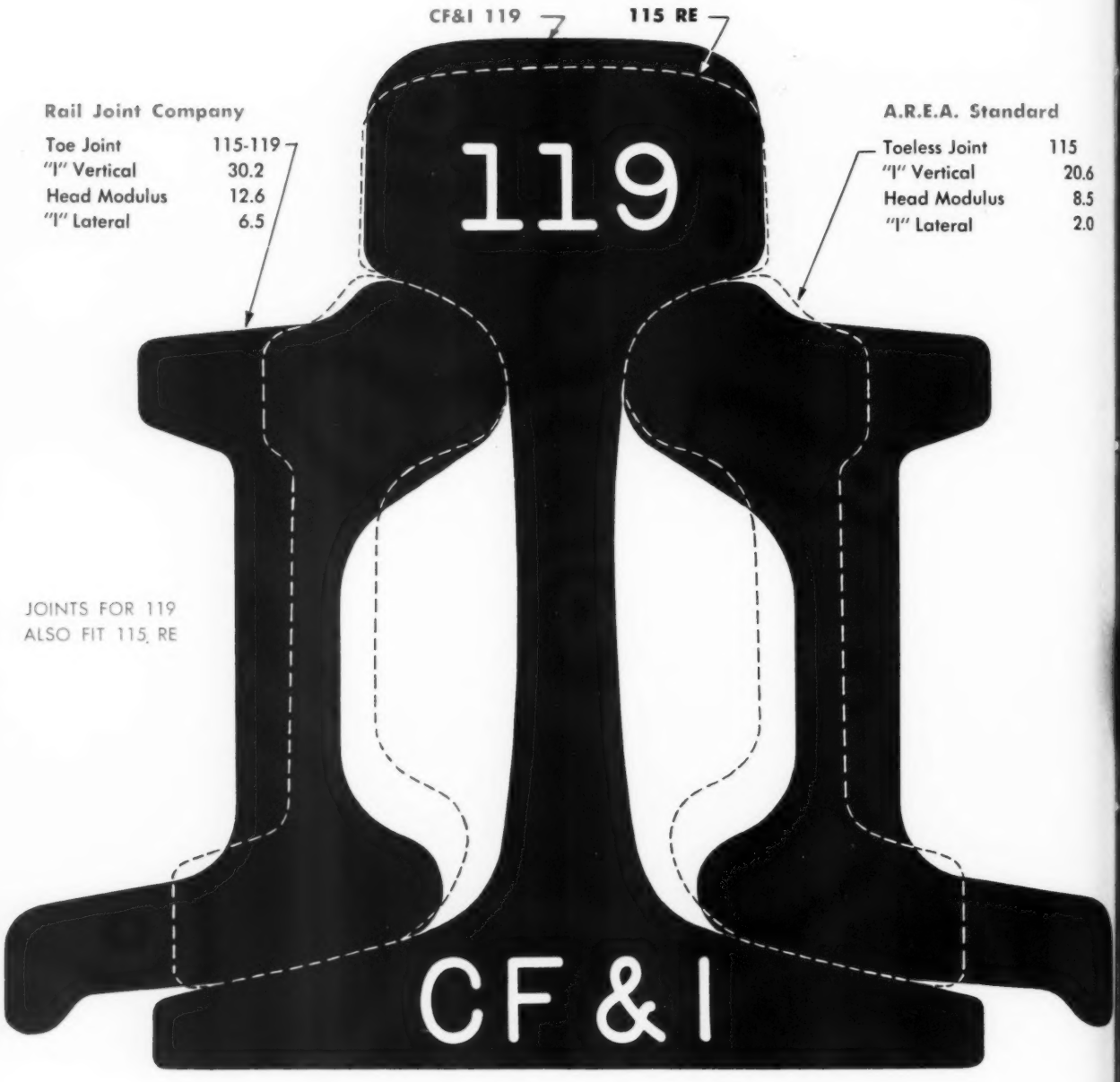
THE NORTHWEST'S OWN RAILWAY

ROUTE OF EMPIRE BUILDER

WAY OF THE ZEPHYRS

PROPERTIES OF SECTIONS

ITEM	SECTIONS 115 RE	CF&I 119
AREA: HEAD	3.91 Sq. In.	4.32 Sq. In.
WEB	3.05 Sq. In.	3.04 Sq. In.
BASE	4.29 Sq. In.	4.29 Sq. In.
TOTAL	11.25 Sq. In.	11.65 Sq. In.
Weight per yard	114.7 lbs.	118.8 lbs.
N.T./mile — single track	202.4	209.4
Moment of Inertia "I"	65.6	71.4
Section Modulus, Head	18.0	19.4
Section Modulus, Base	22.0	22.9
Ratio, "I" to Area	5.83	6.13
Ratio, Section Modulus, Head — Area	1.6	1.7
Distance, Base to N.A.	2.98"	3.124"



JOINTS FOR 119 ALSO FIT 115 RE

		psi	
Maximum Web Stress	119 CF&I	13,400	
	115 RE	15,200	13%

ALL SECTIONS SHOWN ACTUAL SIZE

CTIONS

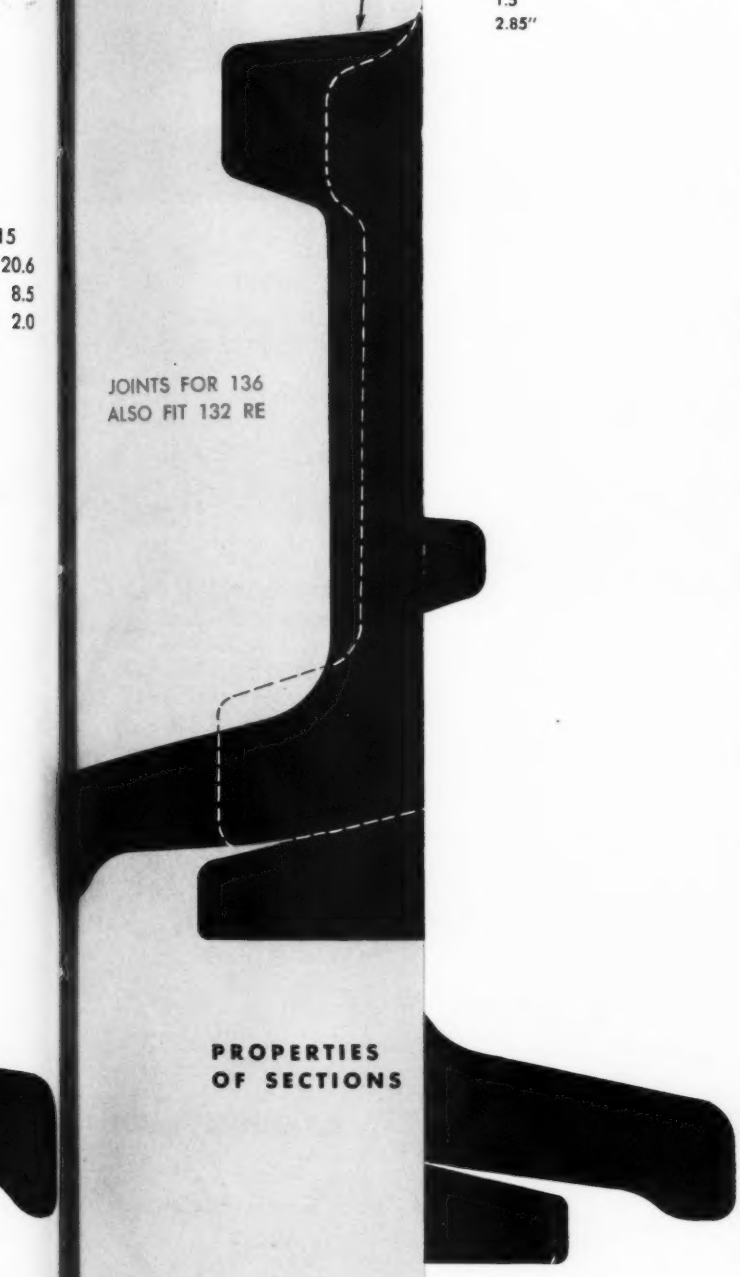
	CF&I 106
	4.00 Sq. In.
	2.50 Sq. In.
	3.95 Sq. In.
	10.45 Sq. In.
	106.6 lbs.
	187.6
	53.6
	16.1
	18.8
	5.1
	1.5
	2.85"

Rail Joint Company

Toe Joint	132-136
"I" Vertical	43.2
Head Modulus	16.6
"I" Lateral	9.6

15
20.6
8.5
2.0

JOINTS FOR 136
ALSO FIT 132 RE



PROPERTIES
OF SECTIONS

Ma

MANCE

36, 119 and 106

TIONS

ntinuing tribute

Railroad

or their

toward

. safer...

track

PROPERTIES OF SECTIONS

ITEM	SECTIONS 115 RE	CF&I 119
AREA: HEAD	3.91 Sq. In.	4.32 Sq. In.
WEB	3.05 Sq. In.	3.04 Sq. In.
BASE	4.29 Sq. In.	4.29 Sq. In.
TOTAL	11.25 Sq. In.	11.65 Sq. In.
Weight per yard	114.7 lbs.	118.8 lbs.
N.T./mile — single track	202.4	209.4
Moment of Inertia "I"	65.6	71.4
Section Modulus, Head	18.0	19.4
Section Modulus, Base	22.0	22.9
Ratio, "I" to Area	5.83	6.13
Ratio, Section Modulus, Head — Area	1.6	1.7
Distance, Base to N.A.	2.98"	3.124"

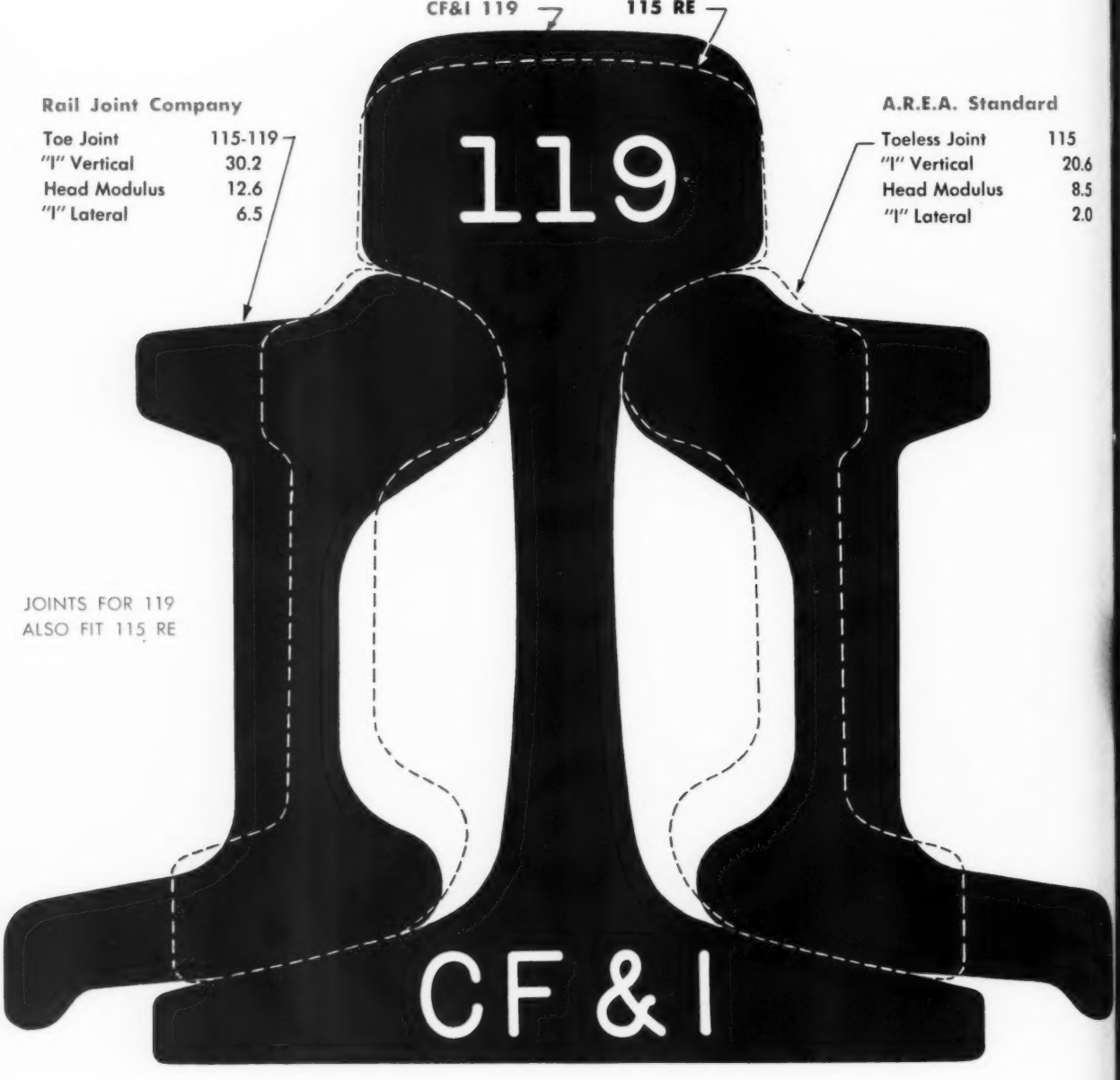
CF&I 119 — 115 RE

Rail Joint Company

Toe Joint	115-119
"I" Vertical	30.2
Head Modulus	12.6
"I" Lateral	6.5

A.R.E.A. Standard

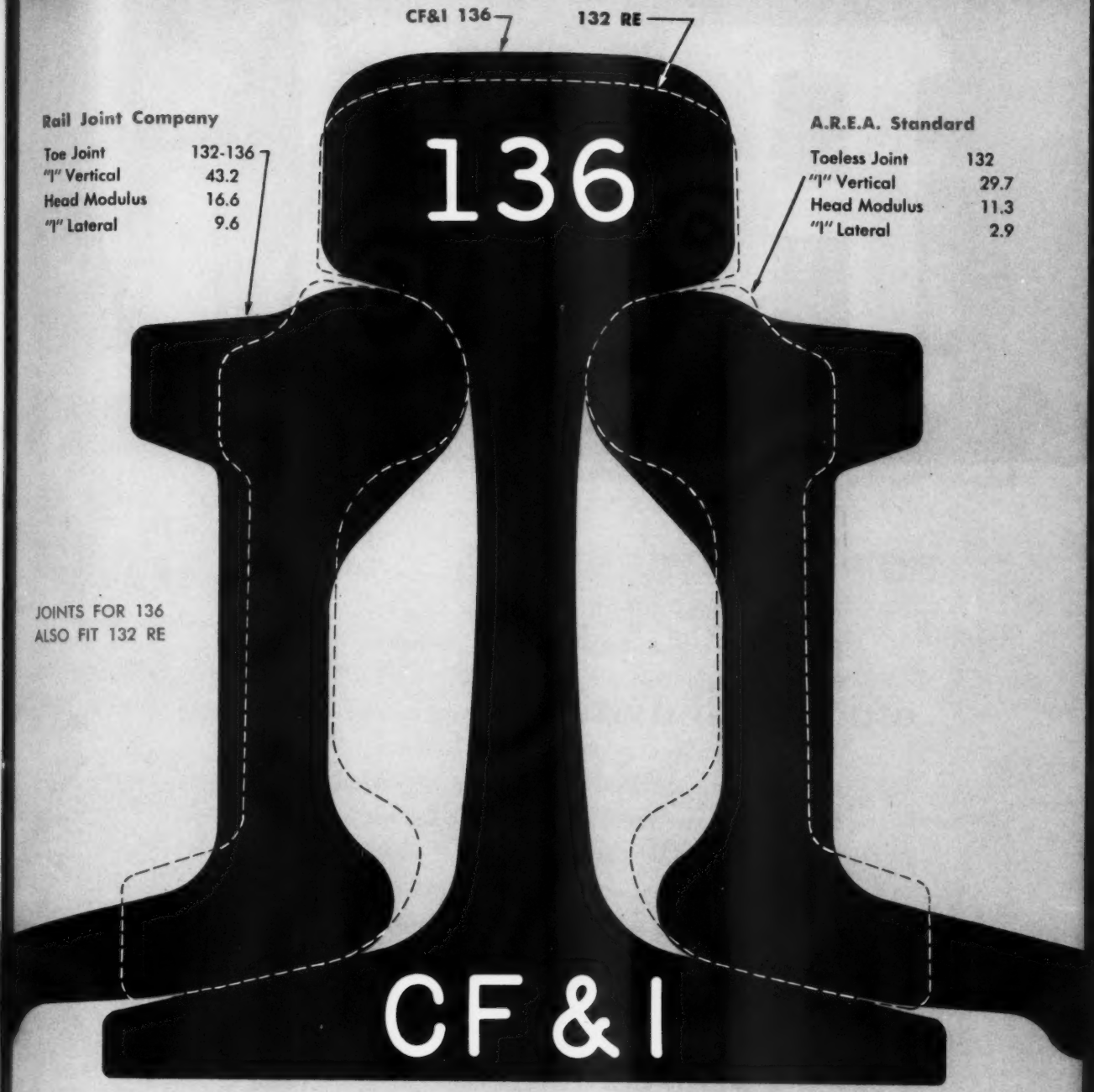
Toeless Joint	115
"I" Vertical	20.6
Head Modulus	8.5
"I" Lateral	2.0



JOINTS FOR 119
ALSO FIT 115 RE

		psi	
Maximum Web Stress	119 CF&I	13,400	
	115 RE	15,200	13%

ALL SECTIONS SHOWN ACTUAL SIZE



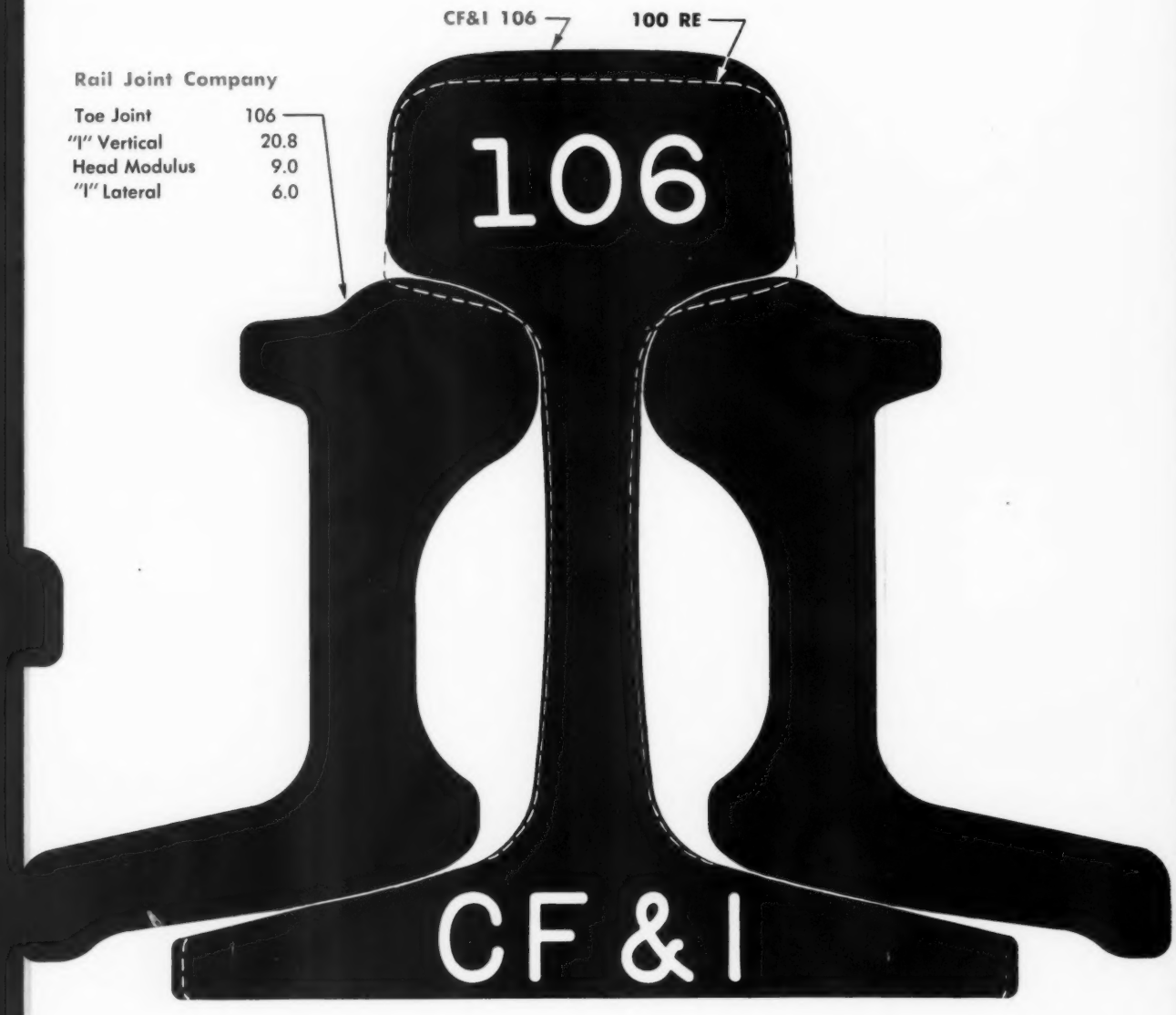
PROPERTIES OF SECTIONS

ITEM	SECTIONS	
	132 RE	CF&I 136
AREA: HEAD	4.42 Sq. In.	4.86 Sq. In.
WEB	3.66 Sq. In.	3.62 Sq. In.
BASE	4.87 Sq. In.	4.87 Sq. In.
TOTAL	12.95 Sq. In.	13.35 Sq. In.
Weight per yard	132.1 lbs.	136.2 lbs.
N.T./mile — single track	232.3	239.4
Moment of Inertia "I"	88.2	94.9
Section Modulus, Head	22.5	23.9
Section Modulus, Base	27.5	28.3
Ratio, "I" to Area	6.8	7.1
Ratio, Section Modulus Head — Area	1.7	1.8
Distance, Base to N.A.	3.2"	3.347"

		psi	
Maximum Web Stress	136 CF&I	10,800	
	132 RE	13,300	23%

PROPERTIES OF SECTIONS

ITEM	SECTIONS 100 RE	CF&I 106
AREA: HEAD	3.80 Sq. In.	4.00 Sq. In.
WEB	2.25 Sq. In.	2.50 Sq. In.
BASE	3.90 Sq. In.	3.95 Sq. In.
TOTAL	9.95 Sq. In.	10.45 Sq. In.
Weight per yard	101.5 lbs.	106.6 lbs.
N.T./mile — single track	178.64	187.6
Moment of Inertia "I"	49.00	53.6
Section Modulus, Head	15.1	16.1
Section Modulus, Base	17.8	18.8
Ratio, "I" to Area	4.9	5.1
Ratio, Section Modulus, Head – Area	1.5	1.5
Distance, Base to N.A.	2.75"	2.85"



		'psi	
Maximum Web Stress	106 CF&I	18,700	
	100 RE	27,300	46%

PERFORMANCE

of CF&I's 136, 119 and 106
RAIL SECTIONS
justifies continuing tribute
to Western Railroad
Engineers for their
contribution toward
improved...safer...
high speed track
structures

Hi-Si®

Recognizing the desirability of developing a rail affording greater resistance to shelling and curve wear, CF&I and Western Railroads have cooperated in verifying the relative merits of High Silicon Rail versus Carbon Steel Rail.

Hi-Si® rail, with a silicon range greater than that stipulated in AREA Specifications, provides greater resistance to gage corner shelling and assures substantially reduced curve wear. Performance 50 to 100% better than Standard Carbon Rail has been confirmed by contours and field investigations of test locations and extensive additional installations on Western Railroads.

Recognition of the value of track betterment has prompted installation of CF&I's new sections and of Hi-Si® steel in areas where excessive wear is encountered. CF&I has accomplished through metallurgy what the 136, 119, and 106-pound rail sections have achieved through improved design.

CF&I STEEL

THE COLORADO FUEL AND IRON CORPORATION

DENVER, COLORADO

This insert will appear in Railway Age, July 13; Railway Track and Structures, August; and Railway Age September 14, 1959

5
di

sa
su
in

a
in
sc
m
en
pl

so
th
th
wa
ad
th
th
wi

we

SPI
roc

RA

(Continued from page 30)

5 ft with ⅛-in steel plate with a raised diamond pattern.

(3) Diamond steel plate of the same thickness also forms the wearing surface of the floor throughout the interior.

(4) The entire unit is insulated.

Entrance to the unit is by means of a 2-ft 6-in by 6-ft steel door, finished in aluminum enamel. An aluminum screen door is also provided. Two aluminum windows are located in each end wall. There is also a small window placed near the ceiling directly over the lavatory. All of them are protected by expanded-steel guards. Two screened ventilators are installed in the roof for the purpose of providing proper circulation of air.

B. J. Minetti, the road's chief engineer, sums up the reasons for the interest in this new development in these words: "The basis for this type of installation is reduced maintenance which, in this case, is practically eliminated. It will be very easy to keep clean, which has been one of our major problems. We feel very highly towards the locker-room unit, and it has been favorably received by those who will use it. It is a considerable improvement over the present tool houses constructed of wood."

Three additional units will be ordered this year, says Mr. Minetti, which will be the same as the first except they will be 10 ft 9 in longer and include an enclosed toilet facility. It is expected that more units will be provided in the future.

The locker-tool room units are constructed and sold by the Atlantic Trailer Corporation, 719 North Point Road, Baltimore, Md.

How adapter cuts relay costs

Special shims enable new rail with narrower base than existing rail to be laid on old tie plates. Not only does the railroad save the cost of new plates but also the labor of placing them.

● When it was decided to replace some 127-lb Dudley section rails on the Napierville Junction with rails of the 132-lb AREA section, the Delaware & Hudson, which owns the NJ, adopted an unusual procedure. It laid the new rail on the old tie plates even though the rail bases were of different widths. Here's the situation:

The plates under the existing rail were of the double-shoulder type and 7 in by 13 in. in size. They were in good condition and provided adequate bearing area for the traffic handled. Each had two cut spikes in the line holes and two screw spikes in the hold-down positions.

The suggestion was made that the new rail be laid directly on the existing plates. However, a difficulty was presented by the fact that the rail base of the 127-lb rail is ¼ in wider than that of the 132-lb rail. The problem was overcome by the use of a device, known as the Spencer rail adapter, which was designed originally for use at locations where heavier rail was scheduled to be laid in a few years' time. The reasoning was that use of the adapters would permit immediate insertion of the larger plates for the proposed rail section under the existing

SPENCER ADAPTER, by providing thin shims along each edge of the rail, enabled the railroad to reuse its existing large plates with a new rail having a narrower base.

L. E. O'CONNOR of the Napierville Jct. Railway holds up an adapter for inspection.

How adapter cuts costs cont'd

REMOVAL of only half the line spikes permitted the old rails to be removed, the adapters placed and the new rail to be laid.

CHANGE-OUT of rail involved the replacement of 127-lb Dudley rail with 132-lb RE section, which has ¼ in narrower base.

light rail, thereby spreading the loads over larger areas and reducing plate cutting of the ties.

Must place correctly

The adapter consists basically of four lengths of metal welded into the shape of a rectangle. Two sides of the rectangle consist of steel shims for insertion between the edges of the rail base and the shoulders of the tie plates. The thickness of each shim has to be computed carefully and the shims must be properly placed to the end that the gage sides of the existing and proposed rail will coincide. The other sides of the rectangle consist of metal strips, spot welded to the shims, which are spaced so as to lie along each side of the tie plate.

For determining the thicknesses of the shims consideration must be given to the widths of the rail heads and bases of both sections. For both the 127-lb and 132-lb sections the width of the ball is 3 in. This established the fact that, in the rail change-out on the Napierville Junction, the center lines of the two sections would be coincident and, hence, that the same shim thickness should be used on each side of the rail seat. Thus, since there is a difference of ¼ in between the rail-base widths of these rails, the shim thickness required was ⅛ in.

However, to be sure that the adapters would fit on all plates, it was decided to use shims 7/64 in thick. The shims were formed from steel stock 7/64 in thick, ⅜ in deep and 8½ in long. The spacing strips, to which the shims were spot welded, were ¼ in thick, 5/16 in wide and 7½ in long, positioned at tie-plate width.

Made at shops

The adapters were made by the D&H in its M/W shop at Colonie, N.Y. Templates were used to assure uniformly accurate spacing. Records show that it cost the road about 30 cents for labor and material to make each adapter. Doubtless this cost would be reduced if they were made in larger quantities on a mass-production basis.

It was not possible to separate the labor cost of applying the adapters from that of the rail laying. However, the work procedure was simple.

Two section gangs, each consisting of a foreman and 5 or 6 men, joined forces to relay the rails. The rails were unloaded and distributed in advance. Shortly before the rail was to be relaid, the new joint bars, bolts, anchors, spikes and rail adapters were distributed. For protection the adapters were placed in the cribs under the existing rails where they would be readily accessible when the old rail was removed.

The work then proceeded a rail at a time. The bars and anchors on the old rail were removed as well as all of the line spikes on the field side of the rail. A Burro crane was then used to remove the old rail and lift in the new. As soon as the old rail had been removed, the adapters were placed on the plates. This operation required from 2 to 3 min for a rail length. If some of the plates were not straight, the screw spikes and inside line spike had to be removed and reset. This would add a few minutes per rail length, depending on the number of plates requiring straightening. The line spikes were then redriven, the rail bolted up and anchors applied.

Savings are substantial

The railroad figures it is ahead several thousand dollars. For one thing, it avoided the cost of new plates. Also, additional labor would have been required to remove and replace the line spikes on the inside of the rails and the screw hold-down spikes on both sides of the rails, and for throwing out the old and placing the new plates. Finally, it would have been necessary to plug all spike holes and adze the ties.

The adapters have now been in service more than a year. According to L. E. O'Connor, assistant to vice president of the Napierville Junction, a recent inspection showed that they have performed satisfactorily, and there appeared to be no reason why they wouldn't continue to do so.

STRUCTURE where liner plate was installed is a brick and stone arch under a 40-ft fill. Previously a length of Multi-Plate arch had been added at each end.

WASHERS of varying thickness were used to make bends in liner-plate arch where grade changed. They were placed in joints between adjacent rings.

Grade changes complicate liner-plate job

● How do you put changes in grade and alinement in a liner-plate installation in a failing masonry arch?

Burlington engineers ran into this problem recently when they undertook to install steel liner plate in an arch which had two changes in grade, one upward and one downward, and one change in alinement. The changes in grade were achieved by using washers of varying thickness in the joints between liner-plate rings at the points of change. The problem presented by the change in alinement was solved by designing a transition elbow which was fabricated in the shop and installed in one piece.

The structure that gave rise to these problems is a stone and brick arch 16 ft wide, 16 ft high and 200 ft long. It is located at Villisca, Iowa, under a 40-ft fill.

The grade of the arch is uniform for 100 ft inside the inlet end. At this point the spring line of the brick arch changes in both grade and line. The grade changes downward 2.143 per cent and the line changed at an angle of 22 deg 26 min. The new grade continues for 46 ft before it changes again, this time upward 4.003 per cent. It then remains uniform to the outlet end of the structure.

Several years ago the structure had been extended by the addition of 24 ft of Multi-Plate arch on each end. The additions had a span of 15 ft and a rise of 7 ft 5 in.

Recently the condition of the original structure became such that it was decided to install an Armco liner-plate arch. The arch selected consists of one 12-pi, three 14-pi and two 16-pi plates, giving an arc length of 86 pi.

The first step was the construction of new concrete bench walls to the tops of which were fastened anchor channels for securing the ends of the arch members. The latter were placed on the same line and grade as the spring line of the brick arch. Construction of the liner-plate arch started at the transition elbow, which was installed first. The elbow consisted of six 3-deg 44¼-min elbows fastened together. From this point construction proceeded to each end where it was bolted to the Multi-Plate extensions.

The 2.143-per cent (downward) change in grade was accomplished by using spacer washers in two joints between three liner plates. Washers 1/16-in thick were used at the bottom, gradually increasing to 15/16 in thick at the top of the arch.

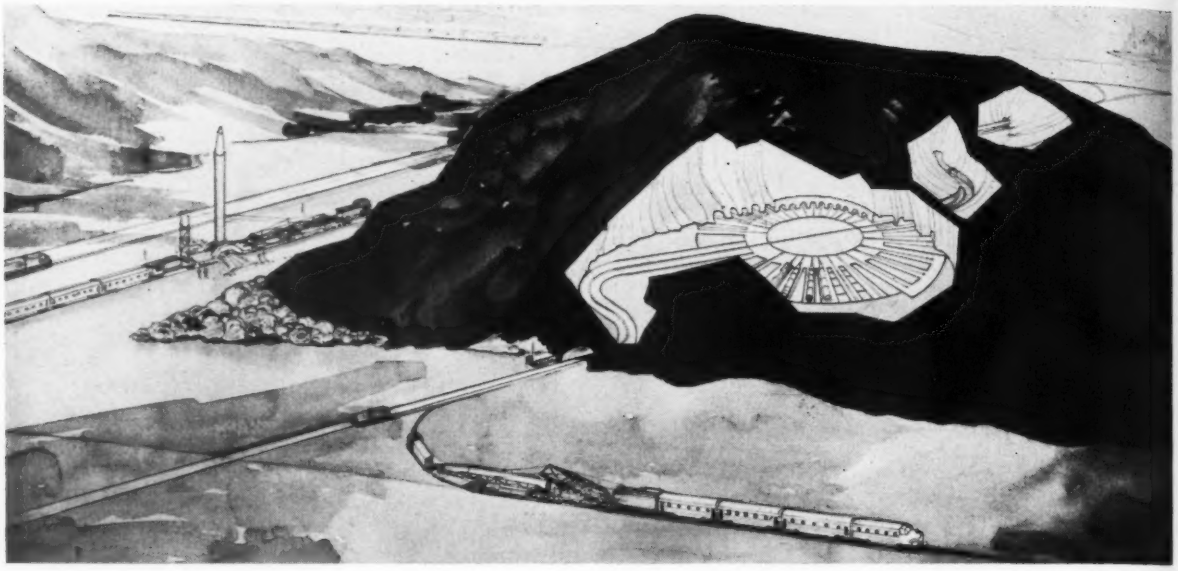
The upward grade change of 4.003 per cent was accomplished by the same method, but required the use of washers in five joints between six liner plates. For this grade change, 1/16-in thick washers were used at the top, gradually increasing to 1 1/16 in thick at the bottom of the arch.

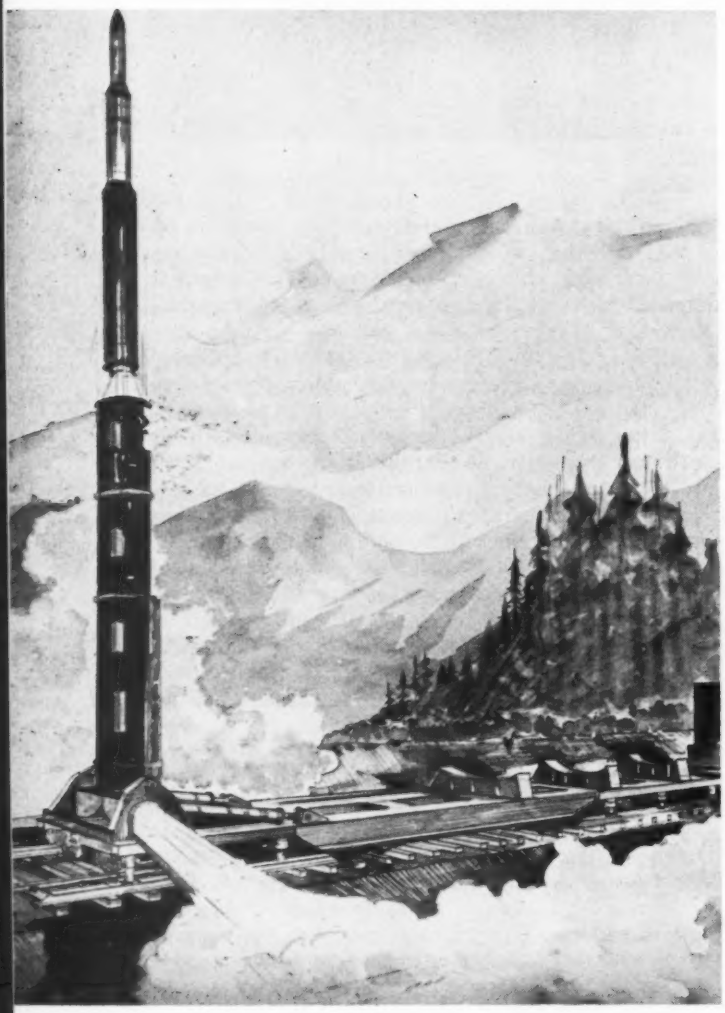
The openings created between the rings by the spacer washers were covered by 20-gage galvanized flat-metal sheets, 6 in wide. These were placed on the outside of the rings and fastened to the spacer washers with 16-gage annealed wire.

After construction was completed, the space between the liner-plate arch and the brick arch was filled with grout.

The construction work was done by the railroad under the general direction of E. J. Brown, chief engineer. The railroad was given assistance by an Armco representative during installation of the liner-plate arch.

News briefs in pictures . . .





Missile-launching trains proposed

Any point on America's 218,500-mile railroad network may become a launching site for intercontinental ballistic missiles. According to plans formulated by Bethlehem Steel Company's Shipbuilding Division and Paul Hardeman, Inc., a Los Angeles missile-engineering firm, special launcher trains would be utilized. Any desired number could be operated, some on the move 24 hours a day, others dispersed at sidings, in mines and tunnels (above), and still others in warehouses. Each train would include a launcher car (left), equipped with an erector for placing the missile in launching position, and control, command and personnel cars. They could be disguised as either freight or passenger equipment.

Rubber crossing installed

At Wooster, Ohio, a rubber highway crossing was recently installed for what is said to be the first time on a curve. Developed by the Goodyear Tire & Rubber Co., it is claimed to have a life of 20 years. Man shown is placing rubber plugs in bolt holes.

2 NEW, ALL-NEW CRANES FROM AUSTIN-WESTERN

A-W CRANES ARE—
- **ECONOMICAL** • **HIGH PRODUCERS**
- **VERSATILE** • **EASY TO MAINTAIN**
- **HIGHLY MANEUVERABLE** • **FAST, MOBILE**

Austin-Western now offers you a complete line of LIFT, CARRY and PLACE equipment . . . designed to make more profit for you in every operation! Investigate. See your nearby Austin-Western distributor today or write us.

ALSO AVAILABLE:

MODEL 210
5-ton range
self-propelled

MODEL 210-P
5-ton range
for truck or stationary mounting

MODEL 220
6-ton range
self-propelled

NEW MODEL 410

10 TON CAPACITY RANGE

- 11′ 1″ overhead clearance
- Hydraulic topping
- All-wheel drive
- Torque converter
- Continuous 360° boom rotation
- Boom raises to 60° from horizontal
- Short 15′ 8″ turning radius, 17′ 8″ w/outriggers
- 25′ telescoping boom can be extended to 47′
- Power booster front-steer
- Full hydraulic rear steer
- Hydraulic outriggers
- Gas or diesel power
- Self-propelled; speeds to 23 mph plus
- Unobstructed visibility
- 10′, 22′ manual boom extensions

NEW MODEL 110

3-5 TON CAPACITY RANGE

- Low 8′ 10″ overhead clearance
- Hydraulic cable hoist
- Boom swings 220°
- Torque converter
- Power booster steer
- Rear trunnion steer
- Road speed 2-15 mph
- Outlifts all other 3-wheel cranes over-the-side!
- Hydraulic topping
- 18′ 7″ boom reach
- Unobstructed visibility
- Full reverse transmission
- Dual front driving wheels
- Gas powered, self-propelled
- Boom raises to 50° from horizontal

Available with wide range of accessories for added versatility!

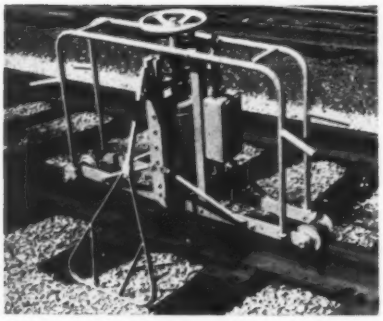
Austin 1859 AUSTIN-WESTERN 1959 100th YEAR PARTNERS IN PROGRESS **Western** CONSTRUCTION EQUIPMENT DIVISION AURORA, ILL.

BALDWIN · LIMA · HAMILTON

Power graders • Motor sweepers • Road rollers • Hydraulic cranes

BALDWIN BLH LIMA-HAMILTON

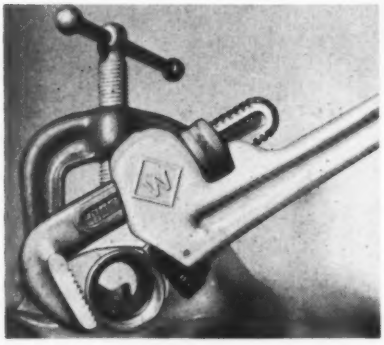
PRODUCTS



For use on rail ends . . .

Electric grinder

A NEW machine for grinding rails has been introduced by the Railway Track-work Company of Philadelphia, Pa. Designated the Electric Rail End or Surface Grinder, Model P-62-E, it weighs 275 lb and is claimed to be easily maneuvered and operated by one man. The rigid construction and balanced design of the unit is stated to ensure precision operation with minimum vibration and long service life. Equipment includes a 5-hp electric motor and starter and an 8-in by 2-in cup grinding wheel. Overall dimensions of the new grinder are 58 in. in length, 14½ in. in width and 25½ in. in height. The new unit is the second rail-grinding machine introduced by the company recently, the first being the Model X-61-E Electric Cross Grinder (*RT&S*, July p. 38). *Railway Track-work Company, Dept. RTS, 3207 Kensington Ave., Philadelphia 34, Pa.*



Self-adjusting jaw on . . .

Pipe wrench

FEATURING a sliding lower jaw which automatically tightens its grip as force is applied, a new Wheeler pipe wrench is available in sizes from 10 in to 24 in. The self-adjusting wrench, it is stated, will not slip during tightening, yet will release instantly on the backstroke to permit quick and easy removal in close quarters. It is claimed that the sliding jaw automatically takes up the slight variation of adjustment resulting from rough handling.

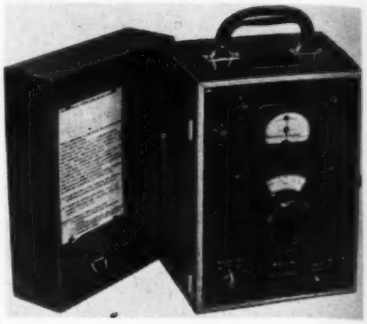
The lower jaw, in its extended position, is also claimed to give increased leverage and a better grip on irregular shapes. *Wheeler Manufacturing Corporation, Dept. RTS, Ross Road, Ashtabula, Ohio.*

•

Sub-soil surveys with . . .

Portable instrument

WEIGHING 20 lb, a new instrument is available which is designed for the purpose of obtaining data for soil studies in connection with foundation design, construction and bedrock determinations. Designated the Vibroground Model 274-M, the instrument utilizes the Barnes Layer Method to derive, through earth conductance, sub-soil profiles which are claimed to clearly indicate the locations, depth and type of soil layers.



The Model 274-M is stated by the manufacturer to be portable and readily operated by one man without technical training. *Associated Research, Inc., Dept. RTS, 3777 W. Belmont St., Chicago, Ill.*

New features built into . . .

Off-road hauler

INTRODUCTION of what is claimed to be a revolutionary new off-road hauler has been announced by the LeTourneau-Westinghouse Company of Peoria, Ill. Designated the Haulpak line of trucks, it is available in three sizes: 22, 27 and 32 tons. "We wanted a tough, fast, high-production hauler," states Merle R. Yontz, president of the company, "which would be cheaper to run, simpler to maintain and easier to operate—one that would make more money per trip for its owners. To get all this at the same time, in the same machine, we did the only thing that could be done—we designed the Haulpak starting from scratch."

The new line features a new suspension system that utilizes four big pistons instead of steel springs and axles. The pistons act like shock absorbers supporting the truck on air instead of steel. In addition, the Haulpak is stated to have twice the ground clearance of conventional trucks since there are no tie rods or exposed steering linkage. The entire steering system is protected within or above the frame line. Its 130-in wheelbase is said to be 5-ft shorter than most 22 and 30-ton trucks which permits the machine to turn completely in a circle only 44½ ft in diameter. The Model 32 is powered by a Cummins 375-hp turbocharged engine.

Standard equipment includes power steering, power brakes and a power seat. Cab air conditioning is available as an optional feature.

The dumping body is stated to have a smooth, clean interior, no tail lip and special twin hydraulic hoists that will eject a full load in 15 sec. Another feature claimed for the dumping body is the hollow box-section supports through which the exhaust is circulated to heat the body. This is stated to prevent wet, cold material from sticking to the surface. *LeTourneau-Westinghouse Company, Dept. RTS, 2301 NE Adams St., Peoria, Ill.*

Here's The Smart Way To Buy Rail Anchors

Buy more holding power. The True Temper BULLDOG Rail Anchor is built with two factory-assembled elements that multiply holding power through a unique two-way *sustained* grip.

Buy tie protection. *Deep* tie-bearing surface transmits load over a wide, flat area to avoid tie damage. It doesn't bear on tie plate, so can't damage tie through spike disturbance.

Buy easy driving. Whether applied manually or mechanically, the BULLDOG installs faster. Time and effort are usually cut in half because improved design means a straighter, more direct path for striking force.

Buy reapplication. BULLDOG anchors can be reapplied again and again, or applied to worn rail . . . with no loss of holding power. That's because the original application doesn't weaken them.

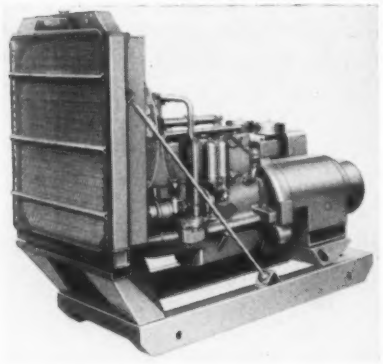
Buy research. True Temper's Mobile Research Lab runs continuing tests on stresses and strains in rail to find ways to make BULLDOG anchors even better.

SEE YOUR TRUE TEMPER REPRESENTATIVE for more facts on cost-saving. Or write True Temper, Railway Appliances Division, 1623 Euclid Ave., Cleveland 15, Ohio.

OTHER TRUE TEMPER RAILWAY PRODUCTS: BULLDOG Ballast Forks; BULLDOG Shovels; BULLDOG Safety Rail Forks; Hammers, Sledges; BULLDOG Scythes, Weed Cutters.

TRUE TEMPER®
BULLDOG RAIL ANCHORS

YOU CAN LOOK TO TT FOR LEADERSHIP



Use for standby power . . .

Electric plant

A NEW Kohler electric plant is available which is designed to provide heavier standby power. Designated the Model 75R81, it is another in the manufacturer's line of heavy-duty power plants. It is a 75-kw, 120/208-volt ac electric plant, has a 6-cylinder engine which develops 220 hp at 1800 rpm, and is equipped for remote starting. The Model 75R81 is claimed to be adaptable to practically all applications and voltage requirements and features a 12-lead reconnectable revolving field with a direct-connected exciter. It is designed to be electrically cranked with an automotive-type 12-volt starting battery. It is stated that voltage regulation is within plus or minus 2 per cent and frequency regulation within 3 cycles. Standard equipment on the engine includes vibro dampers, low oil-pressure and high water-temperature safety devices, anti-dieseling device for remote starting models, dual-type oil filters and oil-bath cleaner. *Kohler Company, Dept. RTS, Kohler, Wis.*

Dismantle frogs with . . .

Impact wrench

A HEAVY-DUTY reversible impact wrench is available which is claimed to be ideal for dismantling frogs and switches. Designated the CP-612, the machine is stated to be capable of removing the nuts from weather-rusted, battered bolts up to 1½ in. in diameter. The new air-powered impact wrench is equipped with a spline drive shank and an exclusive Socket Lock. It is claimed that this combination shank and retainer provides a greater transmission of power through superior socket-to-shank contact, maximum safety through positive retention of socket, longer socket and shank life and easier socket change. Bent nails or "O" rings for securing the socket to the shank are said to be eliminated. *Chicago Pneumatic Tool Company, Dept. RTS, 6 East 44th St., New York 17, N.Y.*

•

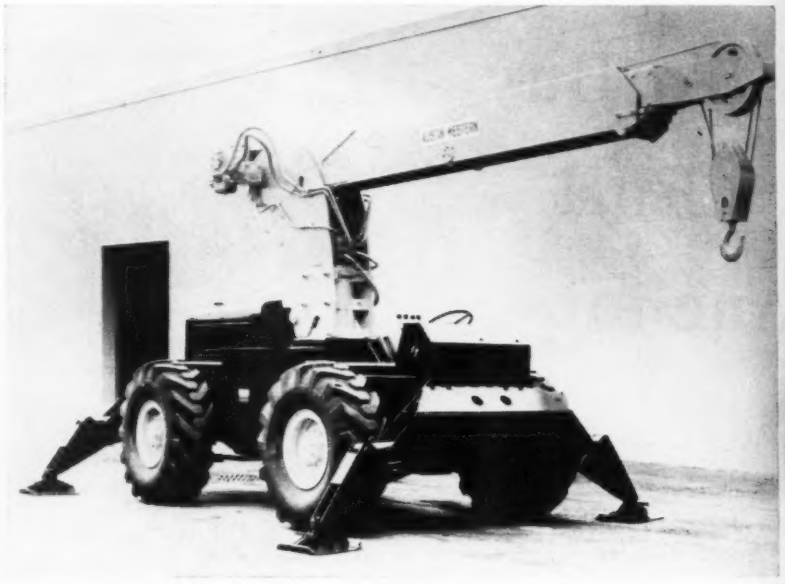
Greater capacity for . . .

Hoist hooks

A NEW series of drop-forged, alloy-steel hoist hooks are available which are claimed to permit 25 per cent greater load capacities than carbon-steel hooks of the same size. This feature enables extra capacity to be handled without increasing the size or weight of the hook. Also, the greater capacity permits the use of an alloy hook one size smaller than corresponding carbon-steel hooks. Equal or greater capacity is claimed to be retained.

Size for size, the carbon and alloy-steel hooks are stated to have identical physical dimensions in some patterns.

Hooks are available in capacities from ¾ to 68¾ tons, safe working load. *J. H. Williams & Co., Dept. RTS, 400 Vulcan St., Buffalo 7, N.Y.*



Hydraulic controls for . . .

Self-propelled crane

TEN TONS are claimed to be lifted smoothly and with precision by the new Austin-Western Model-410 hydraulic self-propelled crane. All operations of the crane are hydraulic, including the telescoping, rotating boom, hook travel and boom topping. In addition, the chassis of the Model-410 has four-wheel hydraulic power steering and hydraulically-operated torque converters and outriggers, the latter being optional equipment.

The boom is designed to provide a horizontal reach of 25 ft, a basic 15-ft boom plus a 10-ft extension. Optional manual extensions are available to give the crane a maximum horizontal reach of 47 ft. The boom is also designed to tilt to an angle of 60 deg from the horizontal and to rotate through 360 deg in either direction.

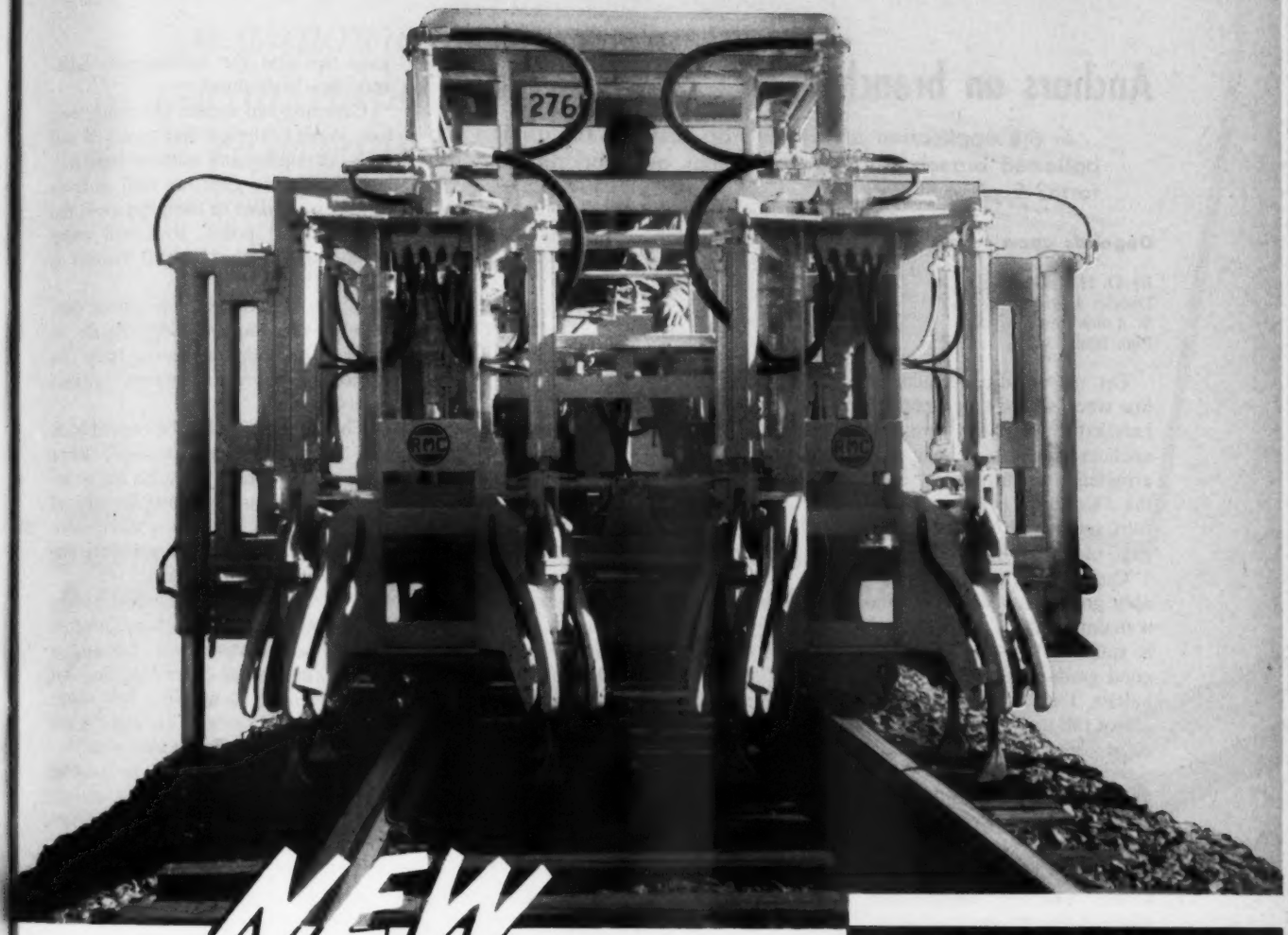
Safe load limit is stated to be 20,000 lb at a 10-ft radius with outriggers lowered. With outriggers raised the cranes are designated to have a capacity of 14,250 lb at this radius.

The crane is equipped with pneumatic tires and is available with either a gasoline or diesel engine.

Accessories available include heated cab enclosures, a heavy-duty, double-acting clamshell bucket, a 24-in diameter hydraulically-operated posthole auger and a remote-control maintenance platform.

The manufacturer states that five models of hydraulic cranes are now available: 110, 210, 210-P, 220 and the new 410. *Austin-Western Works, Advertising Department, Dept. RTS, Box 445, Aurora, Ill.*

World's Most Versatile Tamper



NEW

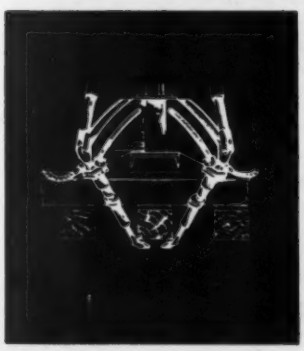
McWilliams MULTI-PURPOSE 8

A PRODUCTION TAMPER

A SPOT TAMPER

A JACK TAMPER

With ballast compaction equal to the McWilliams Production Tamper, the machine tamps under the tie in sixteen positions—each tool tamping in two places. Speed in production tamping: up to 4 ties per minute. *As a Spot Tamper*, split head with integral jacks assures effective tamping of joints, low spots, switches and in yard and terminal work. *As a Combination Jack and Out-of-Face Tamper*, the machine will operate as a jack tamper in making out-of-face raises, finish tamping ties at jacking points. It then can go back and finish tamp the remaining ties —making possible out-of-face tamping with one machine, an operator and a foreman for sighting the raise. *Ask for details.*



Tools tamp in the same pattern as the McWilliams Production Tamper

Railway Maintenance Corporation

PITTSBURGH 30, PA.

Track Stays up Longer with a McWilliams Tamper

Railway TRACK and STRUCTURES

WHAT'S THE ANSWER?

Anchors on branch lines

Is the application of rail anchors justified for use on dirt-ballasted branch lines where the ties are working back and forth? Explain.

Depends upon conditions

By D. H. JENKINS
District Engineer
St. Louis Southwestern
Pine Bluff, Ark.

On native, dirt-surfaced, branch-line track where only light tonnage is handled, I am of the opinion that rail anchors would be of small value in arresting the movement of rail and the "slewing" of crossties which in turn sets up irregularity in line and gage of track.

On branch lines where a reasonably good crosstie and rail condition is maintained and the tonnage handled is sufficient to warrant the use of a good grade of gravel or crushed rock ballast, I am of the opinion that the use of rail anchors in a quantity needed to control the movement of rail is warranted if reasonably good line and gage is to be had.

To be more specific, my opinion is that the type of ballast used, if any, along with the tie condition maintained and the amount of traffic handled are the controlling factors in determining whether or not rail anchors of an effective type are justified on branch-line track.

Are justified

By C. J. MORRELL
Vice-President and General Manager
St. Johnsbury & Lamoille County
Morrisville, Vt.

From an economical and practical point of view, rail anchors are as fully justified on branch lines where the joint ties are moving as is the anchoring in both directions on main lines. Branch lines are normally laid with a lighter rail than exists on main lines and the lighter rail is much more susceptible to creeping. Experience on our road indicates that the addition of tie plates is conducive to greater creepage.

General observations over a number of years convinces me that the surfacing of joints and respacing of ties on creeping track is cut 70 to 80 per cent by the addition of a sufficient number of creepers. Also, the life of joint ties and the immediately adjacent ties is doubled.

Creeping rail causes churning, wet, low joints, chipped and battered rail ends, drooping and surface bent rail, tight and wide gage, as well as fouling of the ballast in the joint area, the most critical point. Rail will creep to the extent that a real hazard is present.

It will eventually kick out of line, which may happen immediately in front of or under a passing train. To avoid such danger, constant vigilance is necessary.

The rail must either be moved back and respaced at an excessive labor cost, or some rails must be cut at intervals, introducing short lengths of rail. The latter is not an entirely satisfactory solution to the problem and the situation is not cured.

There is nothing as demoralizing to a conscientious section foreman than to straighten joint ties, do a painstaking job of correcting line and surface, and then within a few weeks find his track condition right back where it was, due to creeping rail.

Where it is necessary to surface joints three or four times a season, as is often the case, the investment cost of the creepers will be saved in the first year.

The above is predicated on a study of local conditions and applying

NEW QUESTIONS to be answered in November

Do you have an answer to any of the questions listed below? If so, send it in. Payment—based upon substance and length—will be made for each published answer. If you'd prefer that your name be withheld, we'll gladly comply.

DEADLINE: September 30

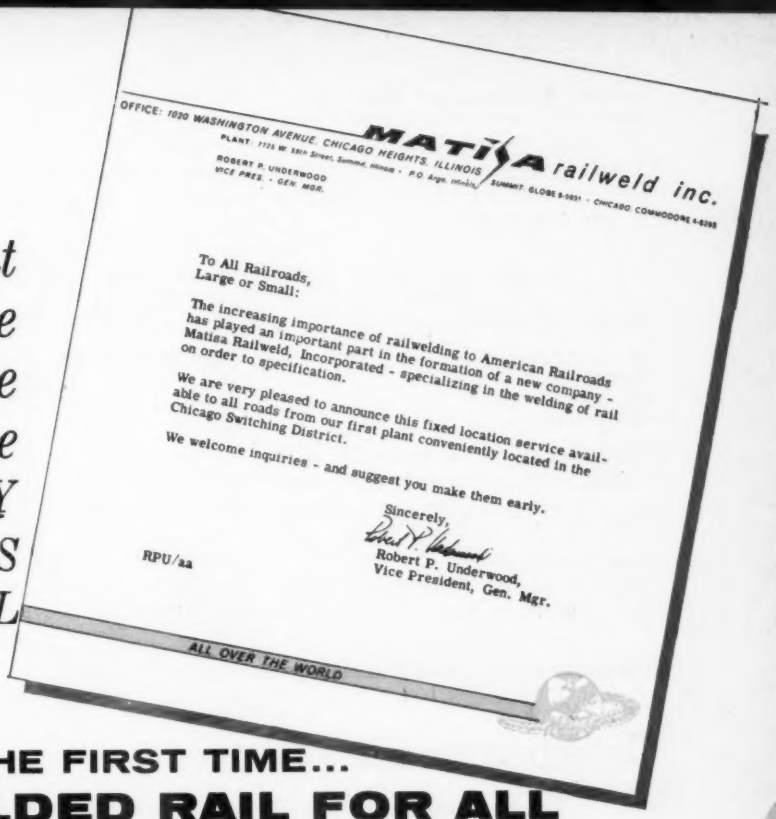
- 1. Is it necessary to remove the self-sealing tie pads from the ties when relaying rail? Explain. If so, how should they be removed?
- 2. What is wrong when a cap on a timber-pile bent works up and down under traffic? Explain. What remedial measures may be taken to correct this situation?
- 3. With cycle maintenance, aren't there a large number of crossties being removed before they have served their full service life? If so, what economical use can be made of the recovered ties?
- 4. What steps can be taken to protect toilet and other plumbing facilities in stations from vandals? Explain. Would changes in design help this situation?
- 5. Where tie renewals run 100 or less per mile, is it practicable with today's forces to change out these ties? Explain. If so, what force and what kind of equipment, if any, should be used?

Send answers to:

What's the Answer Editor
Railway Track & Structures
79 West Monroe Street
Chicago 3, Illinois

Do you have a question you'd like to have answered in these columns? If so, please send it in.

an announcement of major importance to all railroads, large or small, about the AVAILABILITY of CONTINUOUS WELDED RAIL



OFFICE: 1020 WASHINGTON AVENUE, CHICAGO HEIGHTS, ILLINOIS
PLANT: 7725 W. 59th Street, Summit, Illinois • P.O. Argo, Illinois
MATISA railweld inc.
SUMMIT: GLOBE 8-0051 • CHICAGO: COMMODORE 4-6295
ROBERT P. UNDERWOOD
VICE PRES. - GEN. MGR.

To All Railroads,
Large or Small:

The increasing importance of railwelding to American Railroads has played an important part in the formation of a new company - Matisa Railweld, Incorporated - specializing in the welding of rail on order to specification.

We are very pleased to announce this fixed location service available to all roads from our first plant conveniently located in the Chicago Switching District.

We welcome inquiries - and suggest you make them early.

Sincerely,
Robert P. Underwood,
Vice President, Gen. Mgr.

RPU/aa

ALL OVER THE WORLD

NOW AVAILABLE FOR THE FIRST TIME...

CONTINUOUS WELDED RAIL FOR ALL FROM A FIXED PLANT LOCATION

Now it's as easy to order welded rail as it is to order rail lengths. Buy it to your specification—small or large orders. The cost of continuous rail through this central fixed location is considerably less than welding on track with leased equipment—and you are relieved of labor, supervisory, operating and leasing costs. Ship rail lengths to us (in Chicago Switching District) and pick up the finished product—Matisa unloads, provides the complete welding service and loads the finished product.

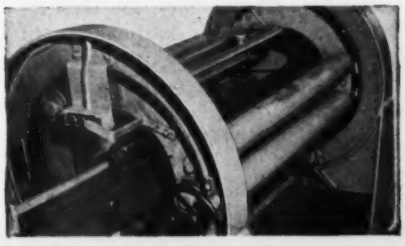
Priorities are assigned on a temporal basis—*not* the size of the order—so your *early* order is advised.

ANOTHER ROCK ISLAND FIRST!
The spirit of this famous slogan has helped to pioneer this first fixed location supplying Matisa Thoroweld rail. It can produce 400 rail lengths per day (three 8-hour shifts). It is located in Summit, Ill., in the Chicago Switching District—close to mills and easily accessible to all roads.

The famous Matisa "Thoroweld" process, flash butt welding in its highest degree of technical development, is utilized in this plant as well as in our mobile equipment.

Above: The actual welding of rail ends.

Below: The semi-automatic grinding process.



MATISA
railweld inc.
1020 WASHINGTON AVENUE,
CHICAGO HEIGHTS, ILLINOIS

creepers as necessary rather than an indiscriminate application of creepers in both directions.

Anchor all tracks

By L. G. Lawson
Roadmaster
Canadian National
Melville, Sask.

Application of rail anchors is justified on all lines, whether branch lines or main lines, whether dirt-ballasted, ordinary pit-run ballast or crushed-rock ballast, where the steel has a tendency to run. Running steel is not only dangerous but it destroys the line and surface of the track and also correct gage where slotted splice bars are used.

The number of anchors that should be used should be based on the need, taking into consideration the grades, fullness of the ballast cribs and the number and speed of trains. The faster the trains travel, the more anchors we require. The number of trains operated has a definite bearing on the number of anchors required. Where only one or two trains are run daily on a section of track, very few rail anchors are required. Where slotted splice bars are used, rail anchors should be placed opposite the joints so that the gage will not be spoiled due to ties skewing, thus bringing the rails closer together at the joints.

On dirt-ballasted branch lines having very few trains, rail anchors may only be required on the down grades and then need not be boxed. However, on most dirt-ballast branch lines lighter steel is used. This rail is always more likely to sun kink than heavier steel so that care should be taken to see that track of this kind is anchored in order to prevent running steel. Often on dirt-ballasted branch lines, the cribs of ties are scarcely filled at all so that the danger of running steel is therefore more prevalent.

The number of anchors per rail or per mile should be based entirely on needs, taking into account the number and speed of trains, grades and fullness of ballast cribs. However, this writer is of the opinion that all tracks need a certain amount of rail anchors.

Detecting termites in piles

Since termites may have interior passageways to their source of moisture, how can it be determined whether or not a pile is infested? Explain.

Sounds and signs

By W. S. Brown
Engineer B&B Maintenance
Baltimore & Ohio
Baltimore, Md.

The bridge inspector, upon inspecting treated piles, will probably use his hammer to determine any indication of hollowness in the pile, as the surface more than likely will be sound due to the treatment. He will look further for any signs of termites, especially in the spring of the year, as the winged alates emerge from the wood and indicate their presence as "flying ants." He will also look for any exterior tunnels or passageways. Termites sometimes build these to bypass an obstruction to their source of moisture. In the case of piling, this could be the treatment. They sometimes gain access to the center of the pile through a bolt hole, seasoning split or defect.

Finding a pile sound with no signs of termites, the inspector would continue his inspection on other parts of the structure. This method would not necessarily prove that termites do not exist. In all probability, the termites would continue their destruction until their presence is finally detected.

If his suspicions were raised, he would bore holes to the center of the pile from several angles with an increment borer. The presence of a section of tunnel, filled or not filled with frass, would indicate termite damage.

Steps should then be taken to insert preservative into the center of the pile to prevent further damage, plugging all holes after completion of the work.

Sounding and boring

By T. H. Patrick
Supervisor Tie Bureau
Chicago, Milwaukee, St. Paul & Pacific
Chicago, Ill.

In piling that is treated with creosote or other preservatives effective against termites, it is difficult to determine infestation, especially in the early stages where outside indications do not show. The outward manifestations may be mud tubes to their point of entrance or, in termite territories, to where checks or damage exposes untreated wood extending below the ground level. Where there are no outside indications, determination is limited to sounding or boring.

Sounding a pile with a hammer or mallet, after the termites are well established, is effective. But to verify any suspicion, the pile should be bored. An increment borer is the best to use. Several borings should be taken if the first does not show an attack. The borings should extend well beyond the treated wood as termites will not work in the well-penetrated wood. If no infestation is found, tight-fitting creosoted plugs should be driven into the holes just bored to prevent access to interior.

In untreated piling, an infestation can usually be distinguished by frayed-out conditions of the wood at the ground line. Since termites leave only a thin shell of wood on the outside, pieces can readily be broken out with a pick for exposing termites or their workings. The latter show a discolored oval spotting on the walls of their galleries.

A further indication is a compact mass of wood particles, dirt and other debris with which they plug up some of their unused passageways. Deeper investigation should be made by taking borings if they are not found near the surface, as with treated piling.

One of the main points to investigate closely on treated bridge piling is close to the top of the piles. This is especially true for the ones next to the headwalls as any carelessness in applying the protective capping of the piles gives the termites a chance to get to the untreated wood. Also, this location on all untreated piles should be well checked in termite territory as it is a very likely place for termites to be found.

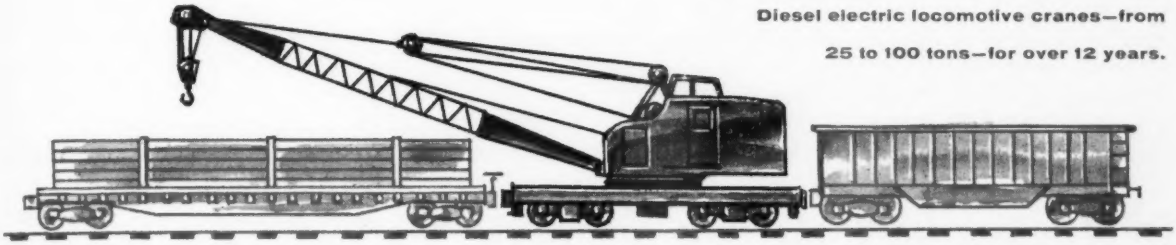
STAY ON THE RIGHT TRACK

WITH

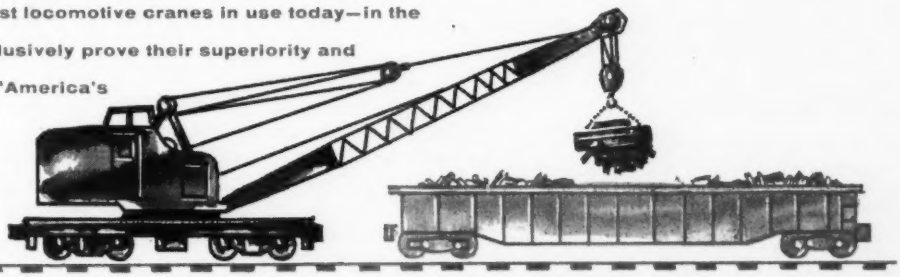
BROWNHOIST

DIESEL ELECTRIC LOCOMOTIVE CRANES

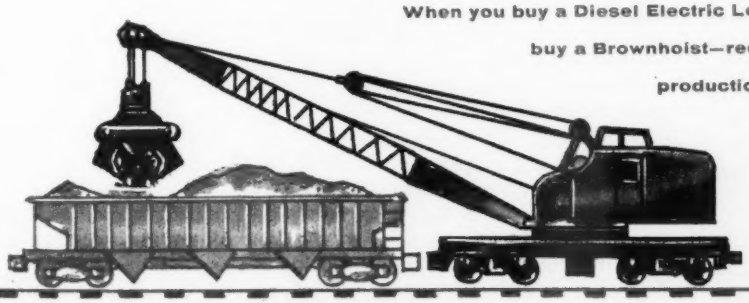
Industrial Brownhoist Corporation has been engineering and building locomotive cranes since 1873—Diesel electric locomotive cranes—from 25 to 100 tons—for over 12 years.



The thousands of Brownhoist locomotive cranes in use today—in the largest corporations—conclusively prove their superiority and their earned reputation as "America's No. 1 Locomotive Cranes."



When you buy a Diesel Electric Locomotive Crane, get the best—buy a Brownhoist—records prove their high capacity production and trouble free, economical operation. Write today for new illustrated catalog.



205

BROWNHOIST

CLAMSHELL BUCKET

250 TON WRECKING CRANE

COAL-ORE BRIDGE

CAR DUMPER

LOCOMOTIVE CRANE

INDUSTRIAL BROWNHOIST CORPORATION, BAY CITY, MICHIGAN • DISTRICT OFFICES: New York, Philadelphia, Cleveland, Chicago, San Francisco, Montreal, Canada • AGENCIES: Detroit, Birmingham, Houston

What's the answer? (cont'd)

Excavating and boring

By DuVal Cravens
Vice President
Bridge Inspection and Treating Division
Osmose Wood Preserving Co. of America, Inc.
Buffalo, N. Y.

Our method of locating and eliminating termites from wooden structures is based on our experience that termite infestation is invariably accompanied by (and probably follows) fungus decay.

In the case of subterranean termites we know of no adequate substitute for excavating the groundline area to a depth of 18 inches all the way around a pole or piling so that the state of decay can be evaluated. One or more borings are made to the center of the timber to determine interior conditions. Exterior decayed wood is removed as far as possible.

By this process, the location of termites is discovered if they are present. This applies to the many instances where there is no trace of the common surface indicators such as destroyed wood or sawdust droppings. Wherever termites are located, a material containing a vaporizing insecticide, a contact insecticide and a wood preservative is injected into the area containing termite corridors by means of a knapsack tank and special fittings at a pressure of about 60 psi.

After the injection process, the exterior of the timber is treated from 18 in below groundline to 3 in above with a paste wood preservative, a plastic film moisture barrier applied, and the excavation backfilled. This method has proved most effective in eliminating further termite destruction and fungus decay as well.

Good success has been achieved in eliminating "dry-wood" termites found in the extreme Southern sections of the country by combining the above method with a surface spray of a fire-retardant preservative solution containing penta. Evidence of dry-wood termites is easily visible in the upper portion of wooden structures and the spray application renders it impossible for them to continue their destructive operations.

R/W access from interstate highways

Where interstate highways closely parallel railway tracks, how frequently and in what form should access be provided to the railroad right of way? Why?

Wants normal access

By M. H. Corbyn
Engineer Public Works
Chicago, Rock Island & Pacific
Chicago, Ill.

This subject has been of utmost importance to Committee 9 (Highways) AREA and I refer you to pages 9-M-15 to 9-M-18 inclusive in the AREA Manual.

In the territory through which the Rock Island operates, we generally have road crossings at one-mile intervals. This access to our right of way by maintenance vehicles has been found satisfactory.

Where limited-access highways are proposed closely paralleling our right of way, we have been requesting access on a private-road basis equivalent to the normal access in that area before limitations were proposed.

Every two miles

By W. R. Bjorklund
District Engineer
Northern Pacific
St. Paul, Minn.

The ideal situation would be for the railway to obtain access points on and off the interstate highway so that the railways would be no worse off than they were before the interstate highway was constructed. However, the Bureau of Public Roads would normally not approve an agreement giving the railways the large number of access points most desirable.

Better access can be obtained by one of the following methods:

1. Paralleling frontage roads.
2. Emergency accesses through the highway right-of-way fence by means of locked gates to be used only in the event of derailment or unusual circumstance on the railway property.
3. Obtaining a special paralleling road between cross roads possibly on the opposite side of the track from the interstate highway.
4. By constructing roadways on the railway's right of way each way from the access points.

Barring a series of deep cuts, frequent cross channels, and intervening bluffs, we would assume that access points should be made available at least every two miles. This would require driving no more than one mile parallel to the railway so as to permit moving men and materials reasonably close to the point of work. The access points will normally be constructed as diamond interchanges. To provide two-way access and egress from the interstate highway, a separation is required. In some instances, a large-diameter sectional-plate culvert, of sufficient size to permit the movement of men, material, and trucks, is installed under the highway. This permits access to the highway from either side of the interstate road.

All bridges and particularly important structures should have access immediately adjacent.

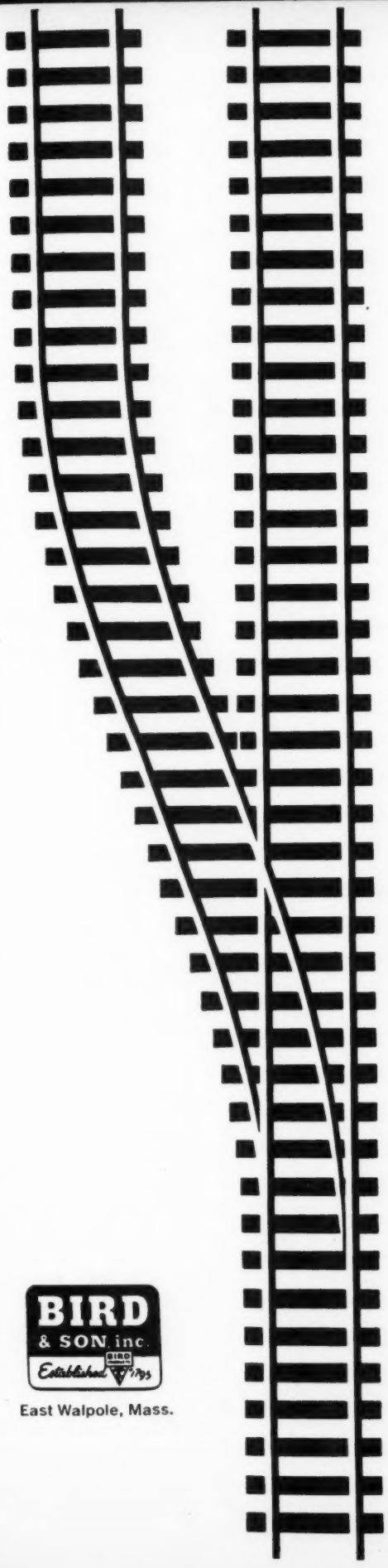
With the advent of additional off-track equipment, it is imperative that the railways retain right of access to the interstate system for the future economy and well being of the railway industry.

Work out mutually

By H. J. Wilkins
Division Engineer
Northern Pacific
Glendive, Mont.

Limited access has become an increasingly important problem due to the expanding interstate highway program. This is especially true along our line as Interstate No. 94, now identified as U. S. No. 10, which parallels a great deal of our main track between St. Paul and Seattle. For much of the way, due to rugged terrain, confines of the river valleys, etc., the interstate is abutting our property and in many instances overlapping our right-of-way by easement privileges. The same situation is encountered by most all railroads in this country, at least to some degree.

How frequent and in what form should access be provided to the rail-

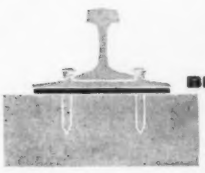


BIRD & SON inc.
Established 1795

East Walpole, Mass.

millions . . .

. . . of dollars are spent by the railroads each year in excessive maintenance costs caused by irregular gauge, inadequate tie plate bearing, and mechanical wear. Bird Self-Sealing Tie Pads eliminate this expense by completely sealing out destructive moisture and abrasive materials from the vulnerable under-plate area. They extend average tie life at least 50%. For proof positive, write for booklet to Dep't HTS.



In-track experience proves . . .
BIRD TIE PADS
save up to $1000.00 per mile per year

road therefore becomes an immediate and common problem that must be worked out between individuals of the state involved and the industrial, engineering, and operating departments of the railroad. In general, I feel that we should insist upon the following:

1. We should enjoy the same access points that we now have to our track. This is very important due to the increased use of off-track equipment, and can be accomplished by proper frontage roads, or access at intervals with paralleling equipment service roads.

2. Emergency access at any point in the event of washouts, wrecks, etc.

Normal access, or access points we now enjoy, are usually provided for by junior and senior interchanges with paralleling frontage roads. There are also instances where access can be provided by cattle guards. This, of course, allows cross-traffic entrance and is permissible on some of the two-lane construction with the provision that proper frontage roads with interchanges will be installed at a later date when traffic warrants four-lane construction.

At locations where normal access is not provided for by interchange or frontage roads, we should insist on access rights by the use of locked gates. These gates should be placed in the limited access fence a minimum of every ½ mile when possible and would be for railroad use only. It is also conceivable that it might become necessary for the state to use these gates to reach a highway facility for repair work in case of a washout, slide, or some other catastrophe.

Cooperation between the state and the railroad is of prime importance. Access points and their locations should be worked out mutually, taking into consideration the locality, terrain, and any other unusual circumstances. After all, we are both here to serve the public and our problems should be solved mutually with that in mind.

Fire extinguishers on machines

Should fire extinguishers be carried on work - equipment units? Which units? What types of fire extinguishers?

On highway vehicles

By R. O. WAGER
Chief Fire Protection Engineer
New York Central System
New York, N. Y.

The current practice on the New York Central is to place fire extinguishers on trucks, busses or similar vehicles which may be operated from time to time over public highways. Extinguishers are not generally provided for other work equipment units. However, we make an exception to this in a very few cases where experimental and development work is involved with special equipment wherein the use of appreciable amounts of either L-P gas or flammable liquids is necessary.

In all cases where extinguishers are provided they are of the types approved for use in Class B (flammable liquid) and Class C (electrical) fire control.

On certain units

By F. N. SNYDER
Supervisor Work Equipment,
Welding, Scales & Weighing
Erie
Meadville, Pa.

We are of the opinion that certain types of M/W work-equipment units should be equipped with fire extinguishers. The following and similar machines and equipment are susceptible to fires and the types of fire extinguishers listed below are practicable and, in most instances, adequate to protect the unit:

Auto trucks, Pullman Power Ballasters and Pullman cribbers should be protected by one-quart extinguishers of carbon-tetrachloride. Locomotive cranes, truck cranes, crawler cranes, house trailers, Pullman ballast cleaners, Pullman winch cars, Kershaw ballast cleaners, Woolery weed burners and the Fairmont W-55 weed burners preferably should be protected by carrying a 30-lb dry-chemical extinguisher. Inspection motor cars, etc., should carry two 5-lb dry-chemical extinguishers.

The 1-qt. carbon-tetrachloride extinguisher is desirable due to its effectiveness on small rubbish, oil and electrical fires. Also, it can readily be recharged in the field, is simple to operate, can be used more than once without recharging (provided sufficient fluid remains), and a very small area is required for mounting the extinguisher. The major disadvantage of the carbon-tetrachloride extinguisher is the toxic fumes given off when in use. Hence, it should not be used in a confined area unless ample ventilation is afforded. It is therefore, only recommended to be used on equipment units having the required ventilation.

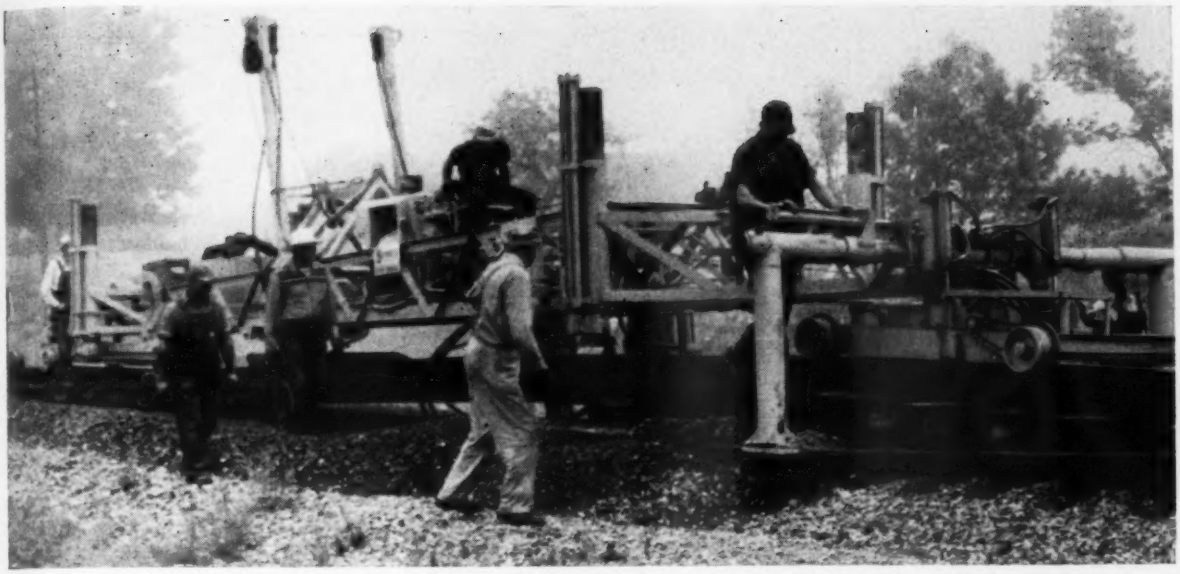
The dry-chemical-type extinguisher is used because of its effectiveness on small rubbish, oil and electrical fires. It also is desirable because it can be used in an unventilated enclosure without danger to the operator from toxic fumes. In addition, it can be recharged in the field. The disadvantage of this type unit is the necessity of replacing the carbon-dioxide cartridge each time the extinguisher is used, no matter how small the fire.

In conclusion, both the carbon-tetrachloride and dry-chemical-type extinguishers do a good job on the types of fires that would most likely be encountered on work-equipment units. For favorable results, they should be applied on the equipment to which they are adapted.

Only outside terminals

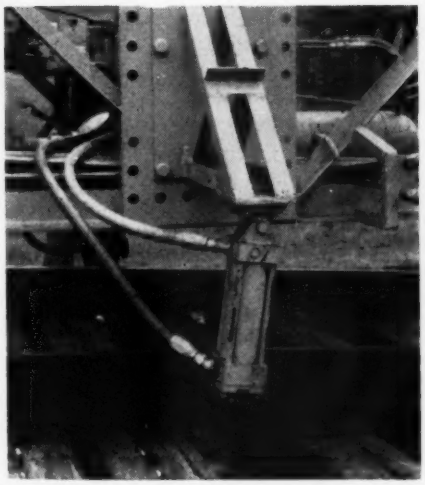
By J. C. ROBERTS
Fire and Sanitary Engineer
Union Pacific
Omaha, Neb.

The Union Pacific provides fire extinguishers of various sizes and types on work equipment operating outside terminal limits and at points remote from public protection. For protection in situations where flammable liquid fires may be anticipated, we lean heavily upon dry chemical units varying in size from 4-lb to 30-lb capacity, depending upon the size and capacity of the work equipment, class of flammable liquid involved and en-



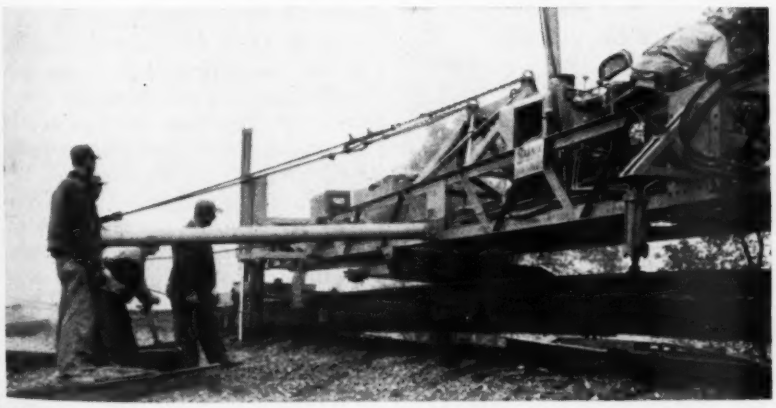
Machine knocks off and ejects ties, lines track behind plow while it is above the subgrade.

Mannix AUTO-TRACK Eliminates 15 to 20 Men.



Hydraulic hammer on each side knocks tie down. Conveyor belt ejects tie to either side.

Lining head controlled by levers near rear end where operator observes alinement. One man replaces lining crew.



Unit raises track, pulls plow under or out from under track. Trained crew removes machine from track in about 10 minutes.

See operating films in the MANNIX Suite, Conrad-Hilton Hotel, Sept. 14-17 or inquire about free showing. Get details of MANNIX service and special rental plan.

MANNIX INTERNATIONAL INC.

4020 Minnetonka Blvd.
Minneapolis 16, Minn.
Phone WAlnut 7-9411

MOBILE . . . and FLEXIBLE . . . to cut your M/W costs

A LeTourneau-Westinghouse Adamst model grader, illustrated above, can give you immediate dollar savings on much of your yard, road crossing, and right-of-way maintenance and construction work.

Covers a lot of territory

An L-W grader is not tied to tracks or highways. It is self-transporting, so you don't waste time waiting for work train or truck-and-trailer hauler. Grader travels at speeds to 27.4 mph . . . over roads, along your right-of-way, or cross-country.

Does many jobs well

This speedy one-man work-crew handles a wide variety of maintenance-of-way jobs. It is equally efficient working alone or in a gang. With regular blade, your modern L-W grader cuts ditches, builds or widens embankments, slopes banks, spreads fill, cleans-up yards and off-track areas, surfaces roads, and handles other grading and blade-work.

L-W grader with optional scarifier rips-up tough dirt, rocky soil, asphalt at crossings, etc. Equipped with optional dozer blade, this machine can also handle minor bulldozing, backfilling, dirtmoving, land clearing, etc. And a V-type snow plow and wing are available for snow removal in winter.

Saves costly hand labor

One man, on an L-W grader, does the work of many pick-and-shovel laborers. Your grader completes more work per hour . . . travels faster and farther, to handle extra projects in a day . . . substantially cuts your M/W costs.

7 L-W Models . . . a size to fit your need

60 hp . . . 80 hp . . . 115 hp . . . 123 hp . . . 145 hp* . . . 160 hp . . . 190 hp*. Check how these 7 L-W graders fit your needs. You may want smaller-size machines for assignments to certain Sections . . . one or more medium-size graders to use within a Division . . . and big 190-hp L-W machines to handle heaviest work, anywhere along your Road. Write for complete information.

*with torque converter †Trademark G-1916-RR-2/3

LETOURNEAU-WESTINGHOUSE COMPANY
Railroad Sales Division
Peoria, Illinois
A Subsidiary of Westinghouse Air Brake Company
Where quality is a habit

DEDICATED TO PROGRESS RPI MEMBER

What's the answer? (cont'd)

vironment in which the equipment operates.

Where the flammable liquid hazard is light and property values at risk are small, we still use many one-quart vaporizing, liquid-type extinguishers as protection. We have some situations involving combustible materials only, such as outfit boarding cars, where we use conventional water-pump tank extinguishers of either 2½ or 5-gal capacity.

Automotive equipment, including lift trucks, tow tractors, etc. must have units of first-aid fire protection, either of the 4-lb dry chemical or the 1-qt vaporizing liquid-type if they operate outside of the shop grounds. We no longer provide first-aid protection on small-capacity machines operating exclusively inside the shop grounds where first-aid fire-protection is otherwise permanently installed and where the company fire brigades are maintained around the clock.

Standard Equipment

By R. C. CALDWELL
Engineer of Track
Texas & Pacific
Dallas, Texas

Fire extinguishers should be considered standard equipment on any major piece of maintenance-of-way work equipment. The value of the equipment and the delay to any M/W program due to the loss of any unit now would be quite serious. The cost of a small fire extinguisher is certainly negligible in comparison to the loss in work that could be occasioned.

The installation of a fire extinguisher on each major piece of work equipment is not the only thing that must be done. There must be periodic drills so that the personnel is always correctly instructed on the proper use of the fire extinguisher. The type of fires which can be successfully combated with a particular type of extinguisher also should be part of the instruction.

In addition to placing them on M/W work equipment, fire extinguishers should also be standard equipment on M/W trucks and cars. Periodic drills for the drivers should also be conducted on the proper use of the fire extinguisher.

The picture is not complete until M/W supervision considers it a rou-

tine important supervisory function to see that all fire extinguishers on their territory on equipment and vehicles are properly filled and will be properly effective in case of fire.

Biographical briefs (cont'd)

Charles W. Wagner, 39, who was recently promoted to engineer of tests (system) of the Canadian National at Montreal, Que. (*RT&S,* May, p. 10), was born at Toronto, Ont., and received his higher education at the Universities of Toronto and Montreal, receiving a Bachelor of Science degree. He entered the service of the Canadian National in 1946 as an instrumentman at Levis, Que. Mr. Wagner served with the research and development department in Montreal from 1949 to 1950. In the latter year he returned to the engineering department as track standards assistant at Montreal, the position he held at the time of his recent promotion.

Francis S. Hutton, 45, who was recently promoted to engineer maintenance of way of the Canadian National at Toronto, Ont. (RT&S, June, p. 10), was born at Hamilton, Ont., and graduated from the University of Toronto in 1936 with a Bachelor of Science degree in civil engineering. Upon graduation he entered the service of the CNR as a chainman, subsequently serving as rodman, leveller and instrumentman. In 1942 he entered military service, serving in France and Germany with the Canadian Railway Operating Group. Mr. Hutton returned to the CNR in 1946 and was appointed assistant engineer at Stratford, Ont. He was later promoted to assistant division engineer at London, Ont., and to division engineer at Hornepayne. In 1949 he was appointed district engineer for the Board of Transport Commissioners at Winnipeg, Man., and Calgary, Alta. He returned to the CNR in 1955 and was appointed office engineer at Toronto. Mr. Hutton was later advanced to assistant to chief engineer there, the position he held at the time of his recent promotion.

Loren F. Pohl, 59, who was recently promoted to chief engineer of the Chicago, South Shore & South Bend at Michigan City, Ind. (*RT&S,* June, p. 10), was born at St. Cloud, Minn., and graduated from the University of Minnesota in 1927 with a Bachelor of Science degree in civil en-

(Continued on page 58)

Charles W. Wagner CNR

Francis S. Hutton CNR

Remington

ONE-MAN RAIL GRINDER

Attachments increase usefulness in surface, cross, switch-point and stock rail grinding plus maintenance shop work

Here's a versatile flexible-shaft grinding machine that can help you meet the challenge of rising costs. One man can roll it—one man can use it, and with attachments it's an all-purpose rail-grinding unit plus an all-round maintenance-shop grinder.

Remington's Model 23 Rail Grinder features a 9-hp, 4-cycle gasoline engine, wheelbarrow-mounted on a welded tubular-steel frame. It rolls easily over rough ground on a 20″ pneumatic wheel or travels over the rails using a quickly attached outrigger. In addition, Remington offers its 2¾-hp, Model 8 Signal Bond Grinder for on-the-road or shop use.

Remington tools can help you reduce maintenance costs. For free details mail the coupon or write Remington.

CHOOSE THE POWER MOST EFFICIENT FOR YOU. REMINGTON POWER TOOLS ARE AVAILABLE IN **AIR • ELECTRIC • GASOLINE AND POWDER-ACTUATED MODELS**

Remington

Remington Arms Company, Inc., Bridgeport 2, Conn.
IN CANADA: Remington Arms of Canada Limited, 36 Queen Elizabeth Blvd., Toronto 18, Ont.

DU PONT

FREE POWER TOOL CATALOGS RT-8

Remington Arms Company, Inc., Bridgeport 2, Conn.
Please send—without obligation—free information on Remington tools checked below:

☐ Rail Grinder ☐ Air Tools ☐ Electric Tools ☐ Chain Saws ☐ Concrete Vibrators ☐ Flexible Shaft Machines ☐ Stud Drivers

Name _____ *Position* _____
Company _____
Address _____
City _____ *Zone* _____ *State* _____

The New JACKSON JACK-SPOT TAMPER

PRODUCT OF INTENSIVE RESEARCH, DEVELOPMENT and TESTING WITH ALL OPERATIONS ELECTRICALLY CONTROLLED and PUSH-BUTTON OPERATED!

IT'S A FAST JACK TAMPER: Jacking to reach and hold track raise and cross level is fast and positive. It quickly and firmly tamps tie to hold raise for production tampers . . . keeps out of their way . . . and it is adapted to existing track surfacing equipment.

IT'S A MIGHTY EFFICIENT SPOT TAMPER: Great power and speed for spotting and smoothing in all ballasts is supplied by TRACK MAINTAINER tamping units.

IT'S A VERSATILE TAMPER: Produces complete ballast consolidation in out-of-face raises . . . with maximum stability right under the rail — *the load bearing zone.* Replaces JACKSON MULTIPLE TAMPERS in moderate to high raise work. Ideal as an all-around production tamper for those requiring an all-purpose jacking-and-tamping machine. *See it at the show or write, wire or phone for complete details.*

JACKSON VIBRATORS, INC.

LUDINGTON • MICHIGAN

See these 3 OUTSTANDING tamping MACHINES at the CHICAGO SHOW

The New JACKSON MONORAIL TAMPER

with POWERFUL "TRACK MAINTAINER" TAMPING UNITS!

Another versatile, highly efficient tamper by the manufacturers of the world's most successful tie-tamping equipment. The new JACKSON MONORAIL is ideal for spotting and smoothing, secondary programs, and all yard track maintenance. Traveling, movement from tie to tie and operation of workhead are all hydraulically actuated and controlled. It is equipped with power ram-turntable for quick transfer to opposite rail. Furnished with set-off and trailer equipped for towing behind truck for rapid transit to widely separated jobs. *By all means inspect it at the show or contact us for complete information.*

The 1960 JACKSON TRACK MAINTAINER

Don't miss the opportunity to inspect the 1960 Model of this production tamper which has won such overwhelming preference as the *best, most economical means* of both putting up and maintaining track of finest, longest-lasting quality. Write, wire or phone for the facts if you don't get them at the show.

Biographical briefs (cont'd)

(Continued from page 55)

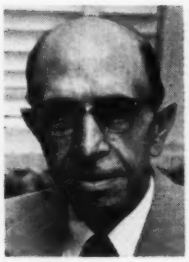
gineering. Mr. Pohl began his railroad career in 1928 as a transitman on the Great Northern. The following year he joined the Chicago Great Western as instrumentman at Chicago. In 1931 he joined the Milwaukee Road in the same capacity at Abeerdeen, S. D. After serving in various positions he was promoted to division engineer at Ottumwa, Iowa. Mr. Pohl entered the service of the C,SS&SB in 1951 as office engineer at Michigan City, Ind., the position he held at the time of his recent promotion.

Walter L. Young, who was recently promoted to chief engineer of the Norfolk & Western at Roanoke, Va. (announced elsewhere in this issue) was born at Roanoke. He entered the service of the N&W in 1924 as a draftsman after five years experience with two bridge companies. Mr. Young was promoted to crossing engineer in 1930, bridge engineer in 1941 and principal assistant engineer four years later. He was advanced to assistant chief engineer in 1948, the position he held at the time of his recent promotion.

Benton E. Crumpler, who was recently promoted to assistant chief engineer of the Norfolk & Western at Roanoke, Va. (announced elsewhere in this issue), started working for the N&W in the motive power department, during summers. He was later employed in an architect's office. Mr. Crumpler joined the engineering department of the N&W in 1926 as a student chainman. He subsequently served as draftsman and transitman. Mr. Crumpler was promoted to maintenance engineer in 1942 and assistant engineer at Roanoke in 1945, serving also in that capacity at Bluefield, W. Va. In 1955 he was advanced to assistant to chief engineer, the position he held at the time of his recent promotion.

Walter L. Young
N&W

B. E. Crumpler
N&W



Arthur B. Stone
N&W

Adrian B. Chaney
MP

Arthur B. Stone, who recently retired as chief engineer of the Norfolk & Western at Roanoke, Va. (announced elsewhere in this issue), was born in Roanoke. He entered the service of the N&W in 1905 as a clerk in the auditing department. The following year Mr. Stone left the railroad to work for the Virginia Bridge & Iron Co., and was subsequently employed by a steel fabricating concern in New York. Returning to the N&W in 1912, he was appointed draftsman, becoming chief structural draftsman in 1929. The following year he was promoted to bridge engineer. Mr. Stone was advanced to assistant chief engineer in 1941 and chief engineer in 1948.

Adrian B. Chaney, 66, who recently retired as engineer maintenance of way of the Missouri Pacific at St. Louis, Mo., (*RT&S,* June, p. 10), was born at Magazine, Ark., and received his higher education at both the Oklahoma and Missouri School of Mines. Mr. Chaney commenced his railroad career in 1906. His early service included that of clerk and extra gang timekeeper with both the Rock Island and Missouri Pacific and inspector with the Southern Pacific at Bakersfield, Calif. He was appointed rodman on the MP at McGehee, Ark., in 1915, ballast inspector in March 1916 and rodman at Wynne, Ark., seven months later. Between May 1917 and July 1919 he was in military service.

CUT WEED CONTROL COSTS WITH A . . . WOOLERY

A great many millions of dollars have been spent keeping roadbeds clear of weeds—and also for keeping retarders and switches open in the winter.

The Woolery PB-B—a versatile, flexible yard or on-the-line weed burner does these jobs WITHOUT FUSS—AND HAS BEEN DOING THEM FOR YEARS! A good example of what we mean: it destroys all weeds COMPLETELY (due to individually controlled burner arms for raising and lowering as required by ground contour) in a 15-foot swath on one trip and—with burner arms extended on return trip—burns a 25-foot swath! YET THE PB-B CAN BE TAKEN OFF TRACK BY ONLY TWO MEN!

Small, light, inexpensive—towed by a motor car, the PB-B is the ideal burner for yard work—and in many cases BETTER than larger burners for on-the-line work. Can be put on the job FASTER! (Three other Woolery burners in larger sizes available.)

Send for folder #170

Model PB-B
WOOLERY WEED BURNER trailer type (shown above) can be towed by motor car. Three burners clear a swath 15 feet wide on first trip and if required can be widened to 25 feet with burners extended on second trip.

WOOLERY MACHINE CO. 2919 Como Ave. S. E., Minneapolis 14, Minn.

serving overseas with the American Expeditionary Force. Returning to the MP he was appointed instrumentman at Little Rock, Ark., and was promoted to roadmaster at Paris, Ark., the following year. He served subsequently as rail inspector, instrumentman and assistant engineer, the latter at Van Buren, Ark. In 1929 he was promoted to division engineer, serving in this capacity at various locations. Mr. Chaney was advanced to district engineer at Little Rock in 1936. While serving in this capacity he was granted a leave of absence during the period January through May 1946 to serve as consultant to the State Railways of Ecuador. He was promoted to assistant engineer maintenance of way at St. Louis in 1947, assistant chief engineer-maintenance there two years later, and engineer maintenance of way in 1956. He was serving in the latter position at the time of his recent retirement.

Robert M. Johnson, 38, who was recently appointed supervisor work equipment-system, of the Western Maryland at Cumberland, Md. (*RT&S*, June, p. 10), was born at Peru, Ind., and received his higher education at Marshall College. While attending college he was employed by the Chesapeake & Ohio in the bridge and building, signal and water supply departments. He joined the Dearborn Chemical Company at Macon, Ga., in 1945. Four years later he was appointed sales engineer with the Railway Track-work Company at Philadelphia, Pa. In 1951, Mr. Johnson joined the Railway Maintenance Corporation as a sales-service representative. He remained in this capacity until May 1, 1959, when he joined the WM.

David D. Low, 62, who was recently promoted to transportation and engineering assistant on the Canadian National at Victoria, B. C. (*RT&S*, June, p. 10), was born at Regina, Sask., and graduated from the University of Saskatchewan in 1923 with a Bachelor of Science degree. Mr. Low entered the service of the CNR in 1921 with the engineering department at Regina. He was promoted to roadmaster there in 1941 and assistant superintendent at North Battleford, Sask., three years later. Mr. Low was serving in this capacity at Prince Albert, Sask., at the time of his recent promotion.

Association News

Mississippi Valley Maintenance of Way Club

The following officers have been elected to serve during the 1959-60 season: President—H. M. Booth, division engineer, Frisco, Springfield, Mo.; first vice-president—R. G. Brichler, chief engineer, Alton & Southern, East St. Louis, Ill.; second vice-president—R. D. Hellweg, assistant regional engineer, Gulf, Mobile & Ohio, Bloomington, Ill.; secretary—E. E. Brady, assistant engineer, Wabash, St. Louis; and treasurer—E. J. Bertel, office manager, engineering department, Missouri Pacific, St. Louis.

SEE THIS FILM of the amazing BANTAM RAIL-ROADER (Patent Pending) in action!

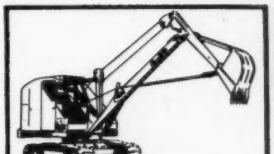
Sit down for a showing of this color motion picture—see how railroads are stepping up their construction and maintenance work schedules with the amazing BANTAM Rail-Roader. You'll view actual B&B and maintenance-of-way jobs, handled faster and better by the BANTAM Rail-Roader . . . witness the versatile BANTAM making a quick-change act from road rig to an all-purpose rail machine for complete job coverage.

The new BANTAM carrier mounted Rail-Roader has 16,000-lb. lifting capacity to handle all kinds of construction and maintenance jobs: restringing, redecking, cap-changing, yard-loading, stockpiling, etc. It works with 11 BANTAM-built fast-change attachments to speed more jobs over a greater work range: pile driving, ditching, backfilling, tamping, erecting, placing concrete, grading, etc.

The patented BANTAM dolly wheel mounting is simple, foolproof—provides fast, easy moves on or off track at any grade crossing . . . rapid, safe rail travel in either direction. BANTAM's simplified mechanical controls give you dependable, fast-cycle operation in any weather. BANTAM builds its own carriers for this service, assuring greatest stability and mobility.

By all means, arrange a showing of this interesting new color movie. No obligation, of course.

MAIL COUPON FOR FILM SHOWING OR LITERATURE!



BANTAM C-350 crawler model. 7-, 8-ton capacity.

BANTAM CR-350 self-propelled also available as RAIL-ROADER model. 11-ton capacity.

Schield Bantam Co.

Schield Bantam Co. RT-232
284 Park Street, Waverly, Iowa

☐ Please arrange to have the BANTAM Rail-Roader film shown to me.
☐ Send literature on the BANTAM Rail-Roader.

Name_____
Title_____
Railroad_____
Address_____
City_____ Zone_____ State_____

WORLD'S LARGEST PRODUCER OF TRUCK CRANE-EXCAVATORS

Piling Specialists to the Railroads

Rental Steel-Sheet Piling
Foster Lightweight Piling
H-Bearing Pile • Pipe Pile

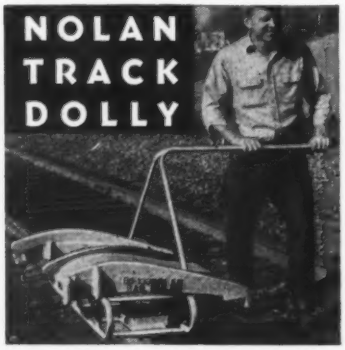
"Faster-from-Foster" service is your assurance of on-time deliveries—anywhere in the country—from Foster's nationwide warehouse and field stocks.

Rail • Switch Material • Track Accessories

L. B. FOSTER CO.

PITTSBURGH 30 • NEW YORK 7 • CHICAGO 4
HOUSTON 2 • LOS ANGELES 5 • ATLANTA 8

NOLAN TRACK DOLLY



You can get rails, ties, supplies, tools, rerailers, etc., to the job with money-saving speed and efficiency, when you equip your crews with the Nolan Track Dolly.
Built of tubular high-carbon steel. Extremely strong and serviceable. Operator's handle conveniently placed to assure correct balance and full control of heavy loads.

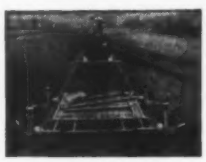
STANDARD DOLLY

Length	Width	Ht. Above Rail	Weight
50½ in.	15½ in.	6⅛ in.	88 lbs.

INSPECTOR'S DOLLY

Length	Width	Ht. Above Rail	Weight
36 in.	14 in.	6 in.	60 lbs.

NOLAN TOOL AND SUPPLY CAR



2000 lbs. capacity. All-tubular high-carbon steel construction for safe carrying of ties, rails, supplies, etc. Car breaks conveniently in center into two sections.
Platform size 48" x 45" Ht. above rail 8" Weight 140 lbs. complete.

Write for complete railway supply catalog.

THE NOLAN COMPANY
166 PENNSYLVANIA ST., BOWERSTOWN, OHIO

Association news (cont'd)

Roadmasters' Association; Bridge & Building Association

The annual concurrent conventions of both associations are to be held at the Conrad Hilton Hotel, Chicago, September 15-17. Because of the great interest in all of the machines and appliances which will be on display at the Coliseum by the Association of Track & Structure Suppliers, the convention will start on a Tuesday and continue until Thursday noon. This will permit many members who arrive on Sunday and early Monday to spend all day Monday at the exhibition in the Coliseum.

The convention program briefly is as follows:

Monday, September 14

8:30 am-5:00 pm—Registration at Conrad Hilton Hotel
Exhibit open all day at Coliseum

Tuesday, September 15

10:00 am-12:00 noon—Joint session
Greetings from representatives of other associations
Address by D. J. Russell, president, Southern Pacific Company
Address by C. J. Henry, chief engineer, Pennsylvania
2:00-4:00 pm—Both associations will hold separate sessions

Wednesday, September 16

9:30 am-12:00 noon—Both associations will hold separate sessions
Afternoon—Both groups will visit exhibits at Coliseum
6:30 pm—Annual banquet with supply association

Thursday, September 17

9:30 am-12:00 noon—Both associations will hold separate sessions including business meeting and election of officers
Adjournment

Association of Track and Structure Suppliers

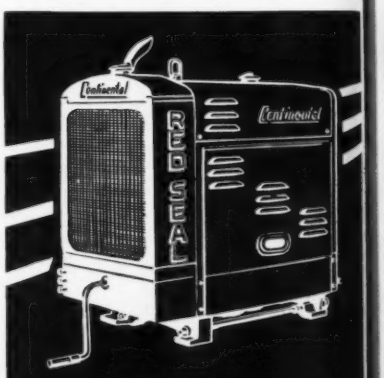
The exhibit to be sponsored by this association at Chicago's Coliseum in September will be of near-record, if not record, proportions, according to Lewis Thomas, director of exhibits. The exhibit will be held in conjunction with the annual conventions of the Roadmasters' Association, and the Bridge & Building Association. It will open its doors on Monday, September 14, so that members of the associations will have a full day in which to inspect the exhibits before the conventions start on Tuesday. The exhibit will be open from 9:00 am to 5:00 pm on Monday and Tuesday, from 9:00 am to 4:00 pm on Wednesday (closing earlier on this day to allow members time to prepare for the banquet that evening), and from 9:00 am to 12:00 noon on the final day.

In commenting on the exhibit, Mr. Thomas expressed the conviction that all available exhibit space in the Coliseum would be reserved by the time the exhibit opens. At the time of going to press, a very limited number of booths was still available. Interested manufacturers should address requests for information to Mr. Thomas, 59 E. Van Buren St., Chicago 5, Ill.

Supply Trade News

AEROQUIP CORPORATION — John M. Van Dam has been appointed general manager of the General Logistics division of this company.

ALLIS-CHALMERS MANUFACTURING CO.— This company has announced the acquisition of the **Tractomotive Corporation**, Deerfield, Ill., and the **Lakefield Manufacturing Company,** Wauwatosa, Wis., effective June 30. The facilities of the Tractomotive Corporation have become the 21st Allis-Chalmers' plant and are being operated as the Deerfield Works under **John W. Carlson,** formerly president of the Tractomotive Corporation, who has been appointed general manager of the plant. It is being operated as part of the Allis-Chalmers Construction Machinery Division of which **E. J. Mercer,** vice president, is general manager. The facilities of the Lakefield Manufacturing Company are being operated as the Wauwatosa Works, in conjunction with the company's new Deerfield Works, under **Kenneth J. Qualman,** formerly plant manager, who has been named works manager.



YOURS FOR
RUGGED STAMINA, ECONOMY,
AND LONG LIFE:
DEPENDABLE
RED SEAL POWER

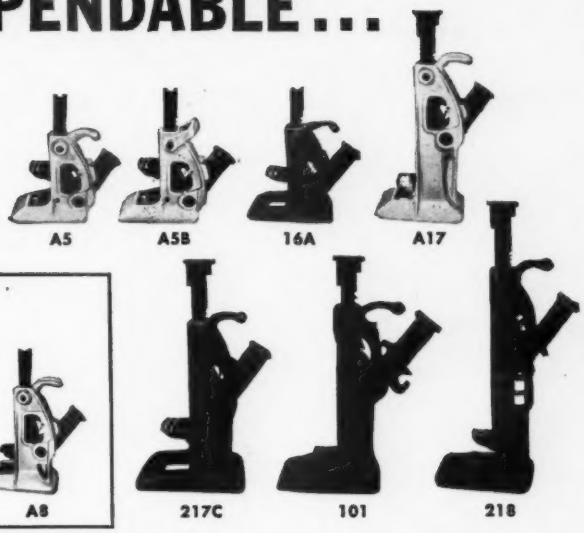
PARTS AND SERVICE EVERYWHERE

Continental Motors Corporation
MUSKEGON, MICHIGAN

WORLD'S MOST DEPENDABLE...

SIMPLEX
TRACK JACKS

New Model No. A8, eliminates need for both high and low lift jacks. 15-tons capacity, 15⅝" high with 7¾" lift. Has 2" min. toe-lift height, weighs only 34 lbs.



- Most complete line—14 models
- Available with malleable or aluminum alloy housings
- Large area (2½"x3¼") lifting toe has non-slip grooves
- Lifting ranges from 5 inches to 19 inches
- Thumb guards and trips on both sides
- Lowest toe height—less digging or pounding to set jack

WORLD'S LARGEST MFGRS. OF INDUSTRIAL MECHANICAL AND HYDRAULIC JACKS
SIMPLEX JACKS
RE-MO-TROL UTIL-A-TOOL JENNY ROL-TOE

ALSO AVAILABLE—Rail Pullers and Expanders, Tie Spacers, Rail Dollies, Tie Removers and Replacers, Bridge Jacks, Jack Supports, Push and Pull Jacks, Steamboat Ratchets and a complete line of Hydraulic Jacks —Rams, Pumps (hand or powered), Pullers and Accessories.

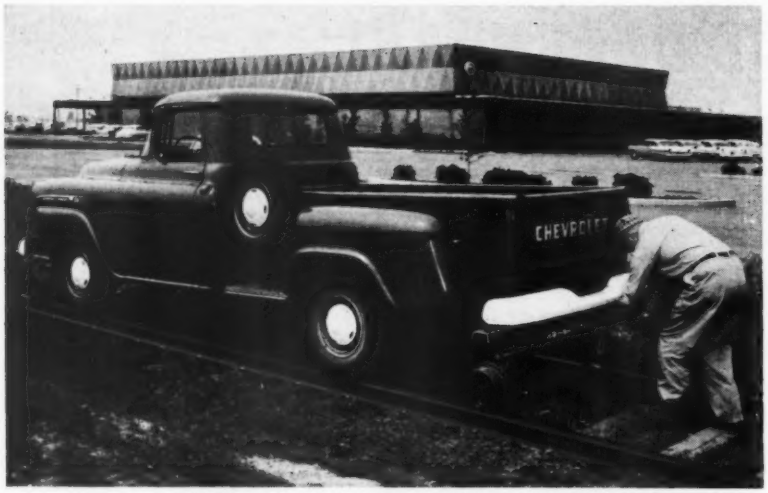
TEMPLETON, KENLY & CO. • 2543 GARDNER RD. • BROADVIEW, ILLINOIS

In The Yard...
OR On The Line
BURRO
WORK POWER PAYS!

When a BURRO goes to work — in the yard or on the line — it delivers fast, low cost performance. Equipped with bucket, magnet, hook, tongs or dragline bucket, a BURRO is ready and able to do the hundreds of odd jobs railroad work calls for. Fast travel speeds (up to 22 mph.) and heavy draw bar pull enable the BURRO to move itself and a work train or cars to the job in a hurry. Once on the job, a BURRO wastes no time getting the work done. BURRO's work power pays dividends every day it operates.

Write for illustrated BURRO Catalogs

CULLEN-FRIESTEDT CO.
1301 S. Kilbourn Ave., Chicago 23, Ill.
Represented in Canada by:
SYLVESTER STEEL PRODUCTS CO., LTD.
LINDSAY, ONTARIO



Rail-Road Unit installed on 1959 Chevrolet Model 3604 ¾-ton pickup

Acceptance far beyond Expectance!

SO PRACTICAL IS THE MULTI-USE

Rail-Road CONVERSION UNIT

TRAVELS OVER RAIL OR ROAD

that railroad after railroad is adopting it to modernize maintenance-of-way crews!

Mounted on automobile or light truck for fast, economical travel on track or highway, the **Rail-Road** is ideal for track and right-of-way inspection or for hauling crews, materials and tools to the job. Now available for any leading make of automobile or light truck, the assembly retracts and locks underneath the vehicle, with exceptional clearance for highway travel.

The **Rail-Road** adds less than 300 lbs. weight at each end of vehicle. It incorporates positive safety through heavy-duty steel torsion springs which are maintenance-free — not affected by wear or weather. The Conversion Unit carries from 30% to 35% of the entire vehicle weight to insure positive "on-rail" performance. Simple, trouble-free locking mechanisms hold the Unit in place for both highway and rail operation. Our foolproof hand-lever operation, requires less than a minute for "on-track" positioning or for removing from track. The simplicity of the precision construction insures long-lasting, trouble-free operation.

The low initial cost of the **Rail-Road** spreads over years of service, and the Unit is re-usable on other vehicles with slight modifications at change-over time. Attractive leasing terms also are available.

Write or phone for full information on the Rail-Road Unit... or for a no-cost DEMONSTRATION on your line!

W. T. Cox Company

INCORPORATED

1021 FRUIT STREET
SANTA ANA, CALIFORNIA

2200 WEST 75th STREET
KANSAS CITY 15, MISSOURI

In Canada — Sylvester Distributors Limited • Kent at Victoria • Lindsay, Ontario

Supply trade news (cont'd)

AUTOLEASE GROUP, INC.—W. C. Pinschmidt who retired as automotive fleet manager of the Chesapeake & Ohio on July 1, has been elected a vice president of Autolease Group, according to an announcement by **Lovan Hall,** president. Mr. Pinschmidt will open offices for this company at 518 American Building, 10th and Main Sts., Richmond, Va. Mr. Pinschmidt will head Autolease's new railway equipment leasing division which will specialize in long term leasing of cars, trucks, trailers, tractors, fork and lift trucks, machine tools and other industrial equipment and machinery to railroads in the United States and Canada.

BALDWIN-LIMA-HAMILTON CORPORATION —Don V. Slaker, chief engineer, Dump Car department, Eddystone division, has retired after 33 years of service.

CANADIAN DUFF-NORTON COMPANY, LTD. —James C. Nairn has been appointed sales manager of this company succeeding **James Gilchrist** who retired July 1 after 30 years of service. Mr. Nairn's headquarters will be at Toronto, Ont.

THE FLINTKOTE COMPANY.—James E. McCauley, vice president and treasurer of Orangeburg Manufacturing Company, a Flintkote division, has been appointed treasurer of the parent company, succeeding **William Feick, Jr.,** who has been elected vice president in charge of sales for the company's Flintkote division. This was announced by **I. J. Harvey, Jr.,** chairman of the board and chief executive officer. **Gene G. Curry,** secretary of the Blue Diamond division has been elected secretary of the parent company to succeed **George K. McKenzie,** who will devote his full time to the duties of executive vice president. Headquarters of each are at the company's executive offices which are located at 30 Rockefeller Plaza, New York.

D. W. HALLBERG COMPANY.—H. G. Carter, retired chief engineer of the Central of Georgia, has been appointed sales engineer of D. W. Hallberg Company at Savannah, Ga.

INDUSTRIAL BROWNHOIST CORPORATION —This company has announced the opening of a new district sales office at 9 Office Park, Birmingham 9, Ala. **John D. Sharp** has been appointed district sales manager of the new office with **John J. McClanahan** as sales representative.

KOEHRING COMPANY—Edwin T. Goree has been appointed vice president in charge of sales for the Koehring division of this company, according to an announcement by **E. A. Brugger,** president of the division.

LINDE COMPANY—William B. Nicholson has been appointed president of this company which is a division of Union Carbide Corporation, succeeding **William M. Haile** who as been elected a vice president of the parent company.

NALCO CHEMICAL COMPANY—This company has announced the formation of two new foreign companies—Nalco de Mexico, S.A. de C.V., and Nalco International, C.A., which will handle transactions in

Venezuela and other South American countries under **Francisco Chairez,** manager, whose headquarters are at Mexico City.

Fred Claybrook is manager in London of Nalco, Ltd., which was formed in January 1959 to handle sales in the United Kingdom.

E. H. McGrew, technical director of the catalyst division of this company, has been promoted to general manager of the division, succeeding **Dr. David G. Braithwaite,** vice president, who has been appointed head of commercial development.

NORTHWESTERN MOTOR COMPANY—R. R. Rosholt, chairman of the board, has become president of this company succeeding **F. W. Anderson** who has retired. Headquarters of the company are at Eau Claire, Wis.

REYNOLDS METALS COMPANY—Warren W. Caskie, assistant manager of transportation market sales, has been promoted to manager of transportation market sales, according to an announcement by **Neil Zundel,** director of transportation markets.

SPERRY PRODUCTS, INC.—Harcourt C. Drake, consulting engineer at Danbury, Conn., retired June 30.

THOMAS INDUSTRIES, INC.—Gilbert Gusland has been appointed merchandising manager of the Wright Saw and Sprayit division of this company, according to an announcement by **Otis Zumwalt,** vice president in charge of merchandising. Mr. Gusland will have offices in the division's headquarters at Sheboygan, Wis.

UNION SWITCH & SIGNAL—Theodore B. Thompson, director of engineering at Pittsburgh, Pa., has been appointed vice president-engineering for this company, which is a division of Westinghouse Air Brake Company. In this position Mr. Thompson has full responsibility for and authority over all railway research and engineering activities of the division.

Obituary

W. D. Brooks, vice president in charge of export for Fairmont Railway Motors, Inc., died on July 10 at Fairmont, Minn.

Kenneth I. Thompson, 55, manager of railroad sales, Linde Company, division of Union Carbide Corporation, died June 28 in the New York Hospital, following a short illness. Mr. Thompson was born in Stratford, Conn. He served as sales representative for the Pennsylvania Pump and Compressor Company, Easton, Pa., in charge of air compressor sales for the Fuller Company, Catasauqua, and as western manager for the railroad department of the Ingersoll Rand Company, Chicago, prior to his joining the Union Carbide Corporation in 1945 as Eastern district manager of the Oxweld Railroad Service Company in New York. He subsequently served as general sales manager at Chicago, vice president and director of the Canadian Railroad Service Company and vice president of sales for Oxweld Railroad Service Company. Mr. Thompson was promoted to manager of railroad sales of Linde Company in 1954 at the time the Oxweld Railroad Service Company was consolidated with the Linde Company.

HIGH-SPEED TRACK CLEANER... STOCKPILE LOADER

Track cleaner cleans full length of tie, unloads moving cars quickly.

Athey
PRODUCTS CORPORATION
5631 West 65th Street
Chicago 38, Illinois

18TC TRACK CLEANER

Fast track cleaning and stockpile loading begins with the busy front end of Athey's 18TC TRACK CLEANER. It adjusts automatically to any material, is full-floating to follow uneven ground. At stockpiles, its bulldozer moldboard and auger flights gather material from a 90" width, create a loading flow of up to *10 cu. yds. per minute!* It cleans both track and intertrack area, unloads moving cars in minutes, sets new production records at the stockpile.

Send today for booklet "Athey HiLoader Track Cleaner." See how you can save money with this versatile, fast-working unit.

Designers and Manufacturers of Heavy-Duty Loading and Hauling Equipment

New fast acting penetrant and rust solvent . . . saves time, trouble, money and tempers. Available in pressurized cans or regular pints and gallons.

SPRAY PRODUCTS CORPORATION

P. O. Box 844 • Camden 1, New Jersey

the improved GAUTIER

the finest in **RAIL ANCHORS**

Made of Alloy Spring steel, the Improved Gautier is one of the heaviest and most rugged rail anchors on the market.

STRENGTH
DURABILITY
ECONOMY

Manufactured exclusively by

MID-WEST FORGING & MANUFACTURING CO.

General Offices: 38 South Dearborn Street, Chicago 3, Illinois

Manufacturing Plant, Chicago Heights, Illinois

Advertisers in this issue

American Brake Shoe Company, (Railroad Products Div.) . . 9
American Hoist & Derrick Co. 13
Armco Drainage & Metal Products, Inc. 17
Association of Track & Structure Suppliers 8
Athey Products Corp. 63
Austin-Western Works, Construction Equipment Div., Baldwin-Lima-Hamilton Corporation 41
Baldwin-Lima-Hamilton Corporation, Austin-Western Works, Construction Equipment Division 41
Bethlehem Steel Company 3
Bird & Son, Inc. 51
Caterpillar Tractor Co. 20
Colorado Fuel & Iron Corp. 31-36
Continental Motors Corporation 60
Cox Company, W. T. 62
Cullen-Friestedt Company 61
Fairmont Railway Motors, Inc. 6-7
Foster Company, L. B. 60
Industrial Brownhoist Corp. 49
Jackson Vibrators, Inc. 56-57
LeTourneau-Westinghouse Company 54
Mannix International, Inc. 53
Matisa Railweld, Inc. 47
Mid-West Forging & Mfg. Co. 64
Motorola Communications & Electronics, Inc. 16
National Lock Washer Co. . . . . Inside Back Cover
Nolan Company 60
Nordberg Mfg. Co. 14-15
Portland Cement Association . . . . . Inside Front Cover
Racine Hydraulics & Machinery, Inc. 18
Railroad Accessories Corp. 4
Railway Maintenance Corp. 45
Remington Arms Company, Inc. 55
Schield-Bantam Co. 59
Spray Products Corporation 64
Templeton, Kenly & Company 61
Texaco, Inc. . . . . Back Cover
True Temper Corporation 43
United States Borax & Chemical Corp., Pacific Coast Borax Company Division 11
Woolery Machine Company 58

"This index is an editorial feature, maintained for the convenience of readers. It is not a part of the advertiser's contract and Railway Track & Structures assumes no responsibility for its correctness."

To reduce maintenance costs

— *install*

NATIONAL

RAILWAY SPRING WASHERS

KEEP BOLTS TIGHT

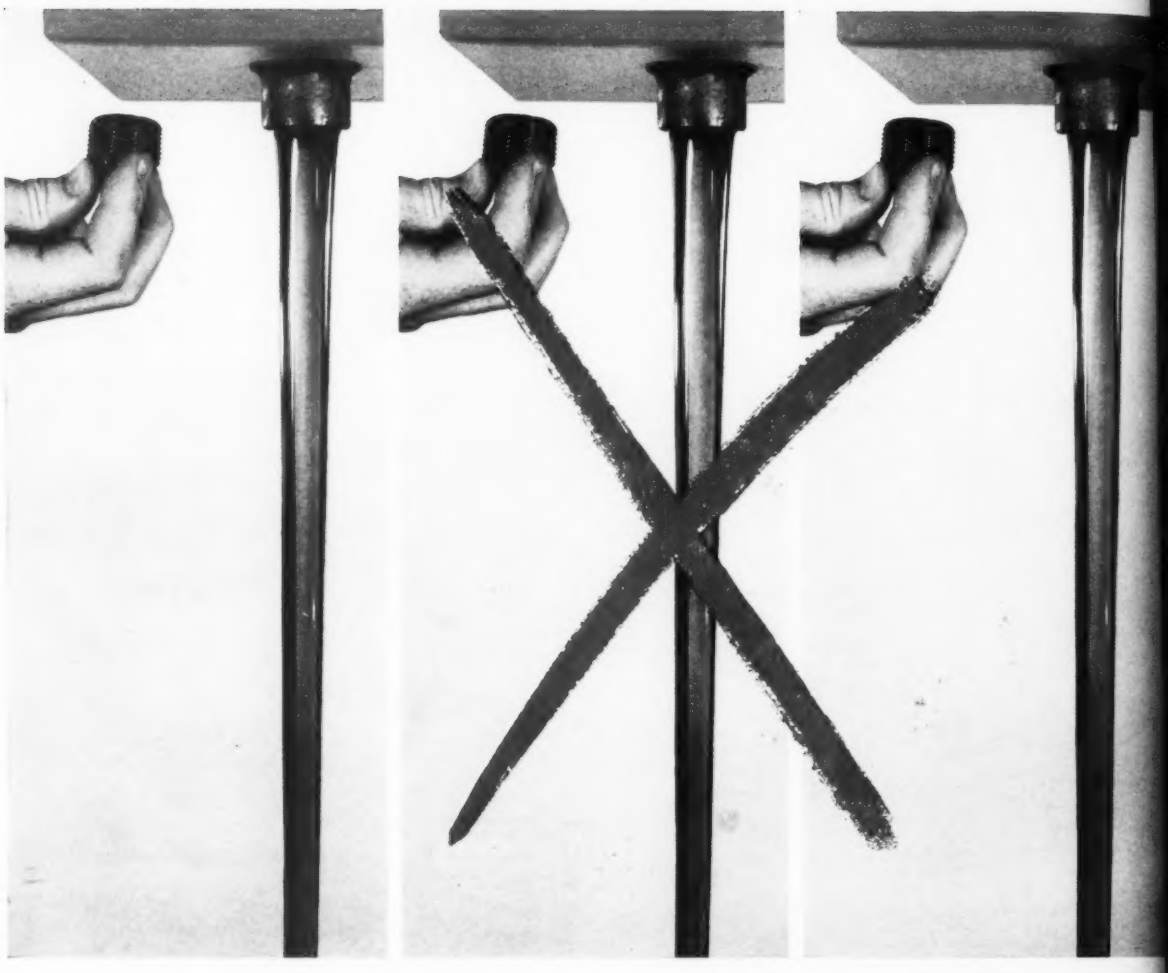
— longer!

The reserve power that is built into the NATIONAL line of powerful, railway spring washers keeps rails and joints tight over long periods under the most gruelling pounding. They absorb shocks, protect rail ends and joints, maintain constant bolt tensions . . . reduce maintenance costs.

A COMPLETE LINE
OF RAILWAY SPRING WASHERS

The NATIONAL LOCK WASHER COMPANY

Serving Industry Since 1886 — NEWARK 5, NEW JERSEY, U. S. A.



How premium hydraulic oil cuts drains, assures better performance

Any hydraulic mechanism in your maintenance-of-way equipment will give more dependable uninterrupted performance, over longer periods between drains, with Texaco Regal Oil R&O. This is why:

Regal Oil R&O is inhibited against rust, oxidation and foam. It keeps the hydraulic system cleaner, and fights wear better than any uninhibited oil. Thus, you have to drain much less often. Parts last longer, maintenance costs drop.

This long-term protection is the basic economy of a premium grade hydraulic fluid like Regal Oil R&O. It pays for the cost of the oil many times over.

The performance of Regal Oil R&O in hydraulic systems is so outstanding that Texaco has made a film about it. We'll be glad to arrange a showing for you, without obligation. Just call the nearest Railway Sales office. There's one in New York, Chicago, San Francisco, St. Paul, St. Louis and Atlanta. Or write:

Texaco Inc., *Railway Sales Division,* 135 East 42nd Street, New York 17, N.Y. Dept. RT-10.

CONSTANT PROGRESS IN OIL'S FIRST CENTURY

TEXACO

Throughout the United States

Canada • Latin America • West Africa

LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)